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The important thing in that record, as far as you are concerned, is the unequalled experience which Lane-Wells has gathered — an intimate knowledge of every oil field, every method, and every operating condition. That experience works for you when Lane-Wells does your perforating because the Lane-Wells crews bring to the job not only their own thorough knowledge of local conditions, but also the many, many things learned on tens of thousands of other wells, other perforating jobs. That unrivaled experienced is one of the biggest reasons why so many wise operators say...(and we are quoting their own words!)... "Call Lane-Wells and get the job done RIGHT!"

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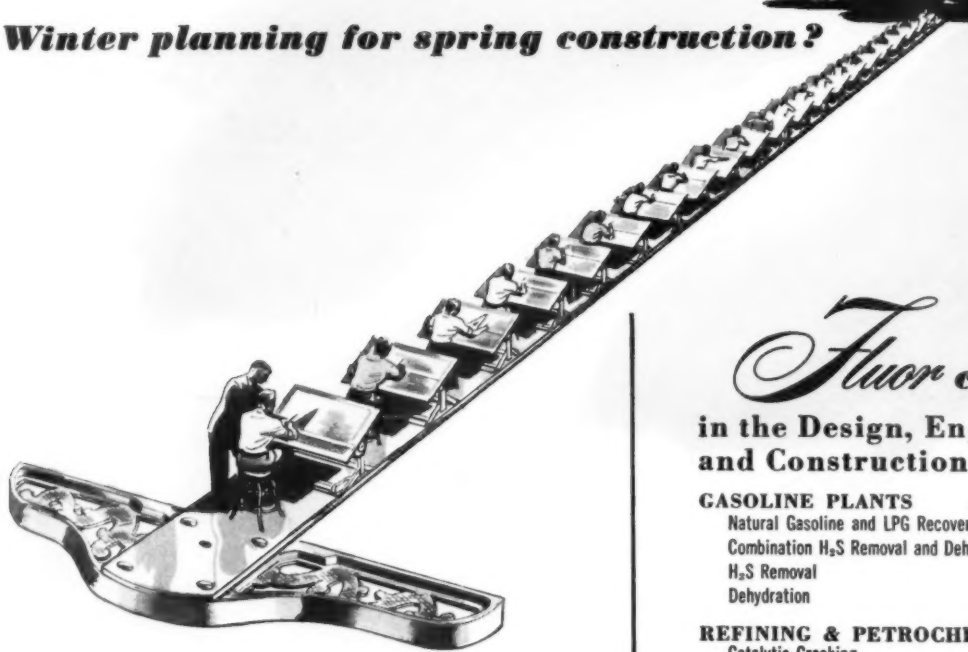
PRICE 50 CENTS TABLE OF CONTENTS PAGE 41 JANUARY 11, 1951

Winter planning for spring construction?



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Here's Another

Sir:

In a recent issue *(The Oil and Gas Journal, August 3, 1950, page 29)* you showed a picture of a double pumping unit owned, I believe, by Shell, and stating that you thought it was the first installation of its kind.

I thought you might possibly be interested in the enclosed picture showing a unit installed by T. V. Gorman, Wichita Falls drilling contractor, on his Jody Smith lease in Wichita County, Texas. The large end of the unit is pumping the 1,600-ft. well and the small end is pumping a 600-ft. well. The installation was made in the spring of 1947.

Please accept my thanks for publishing the fine magazine and my best wishes for 1951.

Ben F. Lowell,
Lowell F. Oil Co.,
Wichita Falls, Tex.

Responsibilities Met

"Those who would defend the oil and gas industry as now constituted can proudly assert that its responsibilities to the public have been handsomely met. When the industry is appraised and measured by the tests laid down even by the socialistic reformers, it is entitled to a high score.

"But over and above its record of efficient performance as an industry and, while meeting the mounting wants, needs, and desires of the American consumers, including also the Army's, Navy's and Air Corps' armadas, the industry has had the disposition as well as the time to be a good neighbor and citizen. . . .

"The oil and gas business in America, along with other industries, has surpassed similar industries of other nations in producing and satisfying the needs of its people. We enjoy today the highest standard of living of any people upon the earth. Private

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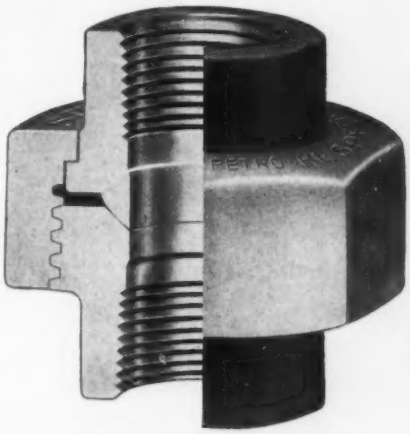

Write Dept. G for illustrated catalog or refer to listings in Composite Catalog pages 3082-3083, Chemical Engineering Catalog pages 980-981 and Refinery Catalog page 546.

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L. A. Bates, tool pusher for Delta Drilling Company, Tri-State Area says:

We get good footage from REED Rock Bits!

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Liquid-blast
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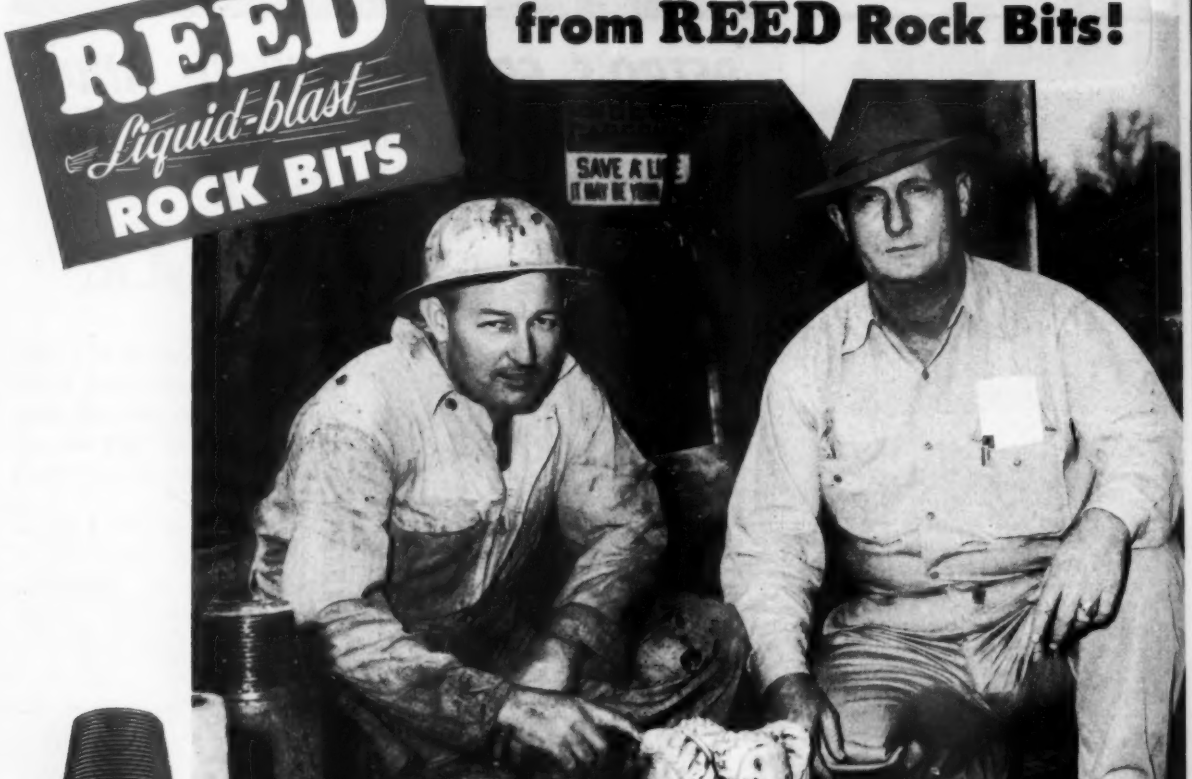

M. L. Eakins, driller, and L. A. Bates, tool pusher for Delta Drilling Company, are shown with a **REED** Liquid-Blast 2HM Rock Bit. The 2HM gives fast drilling and long runs in the medium hard formations.

For good, long runs use the REED "LB"

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enterprise—the American industrial order—is the difference, and has made the oil and gas industry in America great. . . ."

Walace Hawkins, vice president and general counsel, Permian Basin Chapter, American Petroleum Institute.

Seeing Is Believing!

Sir:

Recently the Northeastern Gas Transmission Co., division of Tennessee Gas Transmission Co., staffed their engineering department with personnel that were unfamiliar with your magazine. After distributing a few copies of your well-informed and written weekly among the staff, it was not hard to convince 80 per cent of them to subscribe for the following year at your usual trade rate.

Attached is a list of 11 subscribers including myself and the addresses to which they would like their copies sent. Also attached is a money order to cover these subscriptions.

C. Vincent Sheehan,
Northeastern Gas Transmission Co.
Springfield, Mass.

CALENDAR

1951

January

Kansas-Oklahoma Water Flood Operators, monthly meeting, Booth Hotel, Independence, Kans., January 17.

Southwestern Legal Foundation, second annual institute on oil and gas law and taxation, Southwestern Legal Center, Dallas, January 18-20.

L.P.G. Engine Fuel School, Kansas State College, Manhattan, Kans., January 21-23.

Compressed Gas Association, annual meeting, Waldorf-Astoria Hotel, New York City, January 22-23.

American Institute of Electrical Engineers, winter general meeting, Hotel Statler, New York, January 22-26.

Northwest Petroleum Association, annual convention, Nicollet Hotel, Minneapolis January 25-26.

Southern Gas Association, employe-relations section and accident-prevention round tables, Mobile, Ala., January 26.

Instrument Society of America, New York section, Hotel New Yorker, New York City January 26-27.

February

American Society for Testing Materials, Committee D-2 on Petroleum Products and Lubricants, Shoreham Hotel, Washington, D. C., February 4-9.

New York Oil Heating Association, Inc., Hotel Statler, New York, February 5.

Missouri Petroleum Association, annual convention and trade exhibit, President Hotel, Kansas City, Mo., February 5-7.

American Institute of Electrical Engineers, Tulsa Section, meeting on explosion-proof electrical equipment, Michaelis Cafeteria, February 8.

American Geophysical Union, twenty-sixth regional meeting, Fresno State College, Fresno, Calif., February 9-10.

American Institute of Mining and Metallurgical Engineers, annual meeting, Jefferson and Statler hotels, St. Louis, February 19-22.

Kentucky Petroleum Marketers Association, annual meeting and trade show, Brown Hotel, Louisville, February 20-21.

Kansas-Oklahoma Water Flood Operators, monthly meeting, Booth Hotel, Independence, Kans., February 21.

National Association of Corrosion Engi-

3 WAYS TO CUT WELL DRILLING COSTS

Throughout the oil industry, the name you see on hose is likely to be Hewitt-Robins. That's because for almost a century Hewitt-Robins has built into every oil industry hose the *specialized know-how* that pays off in *longer useful hose life* at lower cost. Below are typical examples of Hewitt-Robins specialization: three hoses that will increase drilling efficiency and cut operating costs at the derrick.

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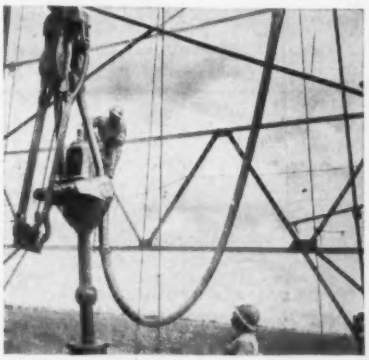
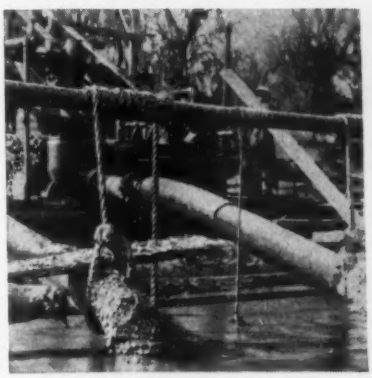
Hose that combines the strength of steel with the flexibility of rubber . . . made to order for today's higher pressures. Hewitt built-in, leak-proof couplings assure an unrestricted, synthetic-lined fluid-way *all the way*. Synthetic tube resists the wear of abrasive and corrosive drilling muds, and withstands the swelling and softening effects of oil. Carcass is high-tensile duck, heavily wire-reinforced for strength, safety, and flexibility. The tough cover resists cutting, abrasion and weather exposure. Specify *Monarch*® brand for deep-well work, *Ajax*® for medium-depth drilling, *Conservo*® for the short holes. Each is *right for the job!*



MUD PUMP SUCTION HOSE...

It's Hewitt-Robins *Monarch* brand and that means dependability *plus!* Dampens the pumping vibration that frequently loosens or breaks rigid connections between slush pump and mud pit; stops harmful "hammering" of pump pistons and valves. Smooth bore, wrapped duck, round-wire construction, with built-in nipples permanently sealed in the hose. Won't collapse or kink in the hardest service . . . and it stays on the job long after conventional mud suction hoses have failed.



ROTARY FLEXIBLE HOSE . . .

Used between the discharge end of the slush pump and the end of the standpipe line, Hewitt-Robins Rotary Flexible Hose dampens vibration efficiently and, unlike rigid pipe, it won't *crystallize*. Extremely flexible, easy to move or handle, tough and rugged, Rotary Flexible is another example of the *right hose* for the job.

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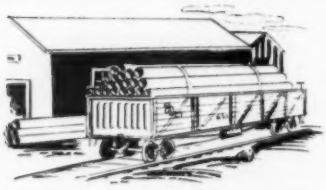

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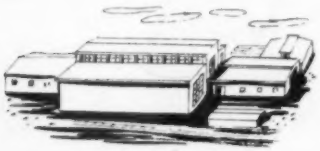
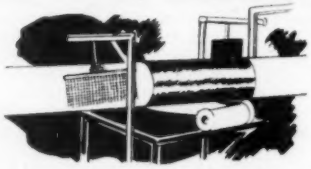


ALL OPERATIONS UNDER COVER . . . there are never any delays on your job at PLS due to weather conditions.



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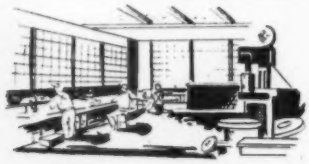

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neers, Tulsa Section, Short Course on Practical Control of Pipe-Line Corrosion, Mayo Hotel, February 21-23.

Iowa Independent Oil Jobbers' Association, Inc., annual convention, Hotel Fort Des Moines, Des Moines, February 21-22.

Wisconsin Petroleum Association, annual convention and equipment show, Milwaukee Auditorium, Milwaukee, February 27-28.

March

American Association of Petroleum Geologists, Rocky Mountain Section, Shirley Savoy Hotel, Denver, March 1-2.

New York Oil Heating Association, Inc., Hotel Statler, New York, March 5.

American Society for Testing Materials, spring meeting and committee week, Cincinnati, March 5-9.

American Petroleum Institute, division of production, southwestern district meeting, Hotel Beaumont, Beaumont, Tex., March 7-9.

Indiana Independent Petroleum Association, spring convention and refiners and suppliers exhibit, Hotel Severin, Indianapolis, March 8-9.

Texas Oil Jobbers Association, Inc., spring convention and refiners and suppliers exhibit, Shamrock Hotel, Houston, March 9-10.

Mid-West Gas Association, Hotel Fontenelle, Omaha, March 12-14.

First South American Oil Congress, Montevideo, Uruguay, March 12-16.

Illinois Petroleum Marketers Association, annual convention, Sherman Hotel, Chicago, March 13-15.

National Association of Corrosion Engineers, annual conference and exhibition, Statler Hotel, New York City, March 13-16.

Gas Appliance Manufacturers Association, annual meeting, The Homestead, Hot Springs, Va., March 19-21.

Ohio Petroleum Marketers Association, annual convention and marketing exposition, Deshler-Wallick Hotel, Columbus, Ohio, March 20-22.

American Petroleum Institute, division of production, Mid-Continent district spring meeting, Herring Hotel, Amarillo, March 21-23.

North Texas Oil and Gas Association, annual meeting, Kemp Hotel, Wichita Falls, Tex., March 24.

Texas Independent Producers and Royalty Owners Association, fifth annual meeting, Beaumont, Tex., March 27-28.

New England Gas Association, annual meeting, Hotel Statler, Boston, March 29-30.

April

American Gas Association, industrial and commercial gas section, conference on industrial and commercial gas, Shoreham Hotel, Washington, D. C., April 2-4.

American Society of Mechanical Engineers, spring meeting, Atlanta, April 2-5.

Oil-Heat Institute of America, annual convention and National Oil-Heat Exposition, Navy Pier and Palmer House, Chicago, April 2-6.

Instrument Society of America, New Jersey section, Essex House, Newark, N. J., April 3.

American Petroleum Institute, division of production, Eastern district meeting, Deshler-Wallick Hotel, Columbus, Ohio, April 3-5.

New York Oil Heating Association, Inc., Hotel Statler, New York, April 9.

Mid-West Regional Gas Sales Conference, Edgewater Beach Hotel, Chicago, April 9-11.

Michigan Petroleum Association, annual spring convention, Detroit Leland Hotel, Detroit, April 10-11.

Southwestern Gas Measurement Short Course, University of Oklahoma, Norman, April 10-12.

American Institute of Electrical Engineers, District 4 meeting, McFadden-Deauville Hotel, Miami, April 11-13.

American Gas Association, distribution, motor vehicle, and corrosion conference, Hotel Peabody, Memphis, April 16-18.

American Society of Lubrication Engineers, annual convention and lubrication show, Bellevue-Stratford Hotel, Philadelphia, April 16-18.

National Petroleum Association, Hotel Cleveland, Cleveland, April 18-20.

American Petroleum Institute, Rocky

Mountain district spring meeting, Gladstone Hotel, Casper, Wyo., April 19-20.

Southern Gas Association, Buena Vista and Edgewater Gulf hotels, Biloxi, Miss. April 23-25.

American Association of Petroleum Geologists, Society of Economic Paleontologists and Mineralogists, Society of Exploration Geophysicists, joint annual meeting, Jefferson Hotel, St. Louis, April 23-26.

Natural Gasoline Association of America annual convention, Mayo Hotel, Tulsa April 25-27.

Indiana Gas Association, French Lick Springs Hotel, French Lick, Ind., April 26-27.

American Gas Association, industrial and commercial gas section, industrial gas school, William Penn Hotel, Pittsburgh April 29-May 4.

American Geophysical Union, thirty-second annual meeting, National Academy of Sciences, Washington, D. C., April 30 May 2.

American Petroleum Institute, division of refining, sixteenth mid-year meeting, Mayo Hotel, Tulsa, April 30-May 3.

May

American Institute of Electrical Engineers, District 1 meeting, Hotel Syracuse, Syracuse N. Y., May 2-4.

New York Oil Heating Association, Inc., Hotel Statler, New York, May 7.

American Gas Association, Natural-Gas Department, Dallas, May 7-8.

Independent Petroleum Association of America, mid-year directors' meeting. Cosmopolitan Hotel, Denver, May 7-8.

Gas Appliance Manufacturers Association, natural-gas department spring meeting, Dallas, May 7-9.

Liquefied Petroleum Gas Association, annual convention and trade show, Stevens Hotel, Chicago, May 7-10.

American Petroleum Institute, division of production, Pacific Coast district, spring meeting, Biltmore Hotel, Los Angeles, May 10-11.

American Institute of Chemical Engineers, regional meeting, Hotel Muehlebach, Kansas City, May 13-16.

American Gas Association, operating section, production and chemical conference, Hotel New Yorker, New York City, May 14-16.

Pennsylvania Gas Association, Wernersville, Pa., May 15-17.

American Institute of Electrical Engineers, District 5 meeting, Loraine Hotel, Madison, Wis., May 17-19.

Empire State Petroleum Association, Inc., Hotel Statler, Buffalo, N. Y., May 20-22.

American Petroleum Institute, division of marketing, mid-year meeting, Cincinnati, May 28-29.

Third World Petroleum Congress, Kurhaus, Scheveningen, the Netherlands, May 28-June 6.

American Petroleum Institute, standardization and standing committees, division of production, mid-year meeting, Brown Palace Hotel, Denver, May 28-June 1.

June

Society of Automotive Engineers, Inc., summer meeting, French Lick Springs Hotel, French Lick, Ind., June 3-8.

New York Oil Heating Association, Inc., Hotel Statler, New York, June 4.

NOMADS

Tulsa Nomads, third Friday of each month. After Five Room, Tulsa Hotel.

Dallas-Fort Worth Nomads, first Monday of each month, Greater Dallas Club.

Houston Nomads, second Monday of each month, Ye Ole College Inn, Houston.

Los Angeles Nomads, second Wednesday of each month, Jonathan Club.

New York Nomads, first Monday of each month, Louis Sherry's, 300 Park Ave. Election of officers January 15.

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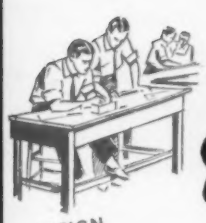

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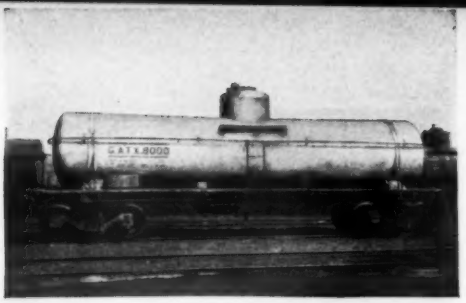

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why aluminum cars?

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JOURNALLY Speaking

More For Your Money

IN keeping with our policy of constantly improving the content and appearance of our favorite oil publication, a couple of minor changes were inaugurated with last week's issue. They are so minor that they probably were not noticed by most of our avid readers.

They concerned what in journalistic parlance is called the masthead—the names of our staff and related information which appears in the left-hand columns of this and the following pages. These columns have been narrowed a wee bit, thus giving more space for the table of contents and for what you are reading now.

We calculate that this widening of the column measure of this department will require us to bat out approximately 100 well-chosen words every week beyond what it used to take to fill this page neatly to the bottom, but we assume the task cheerfully, secure in the knowledge that nobody ever expects to find any worth-while information on this page anyway.

Print to Fit

THIS subject of the number of words on a page brings up a question which we are frequently asked by people who have never been smeared with printer's ink: "How do you manage to make articles come out even at the bottom of a page?"

Several tricks of the trade are employed to achieve this result. All editors know approximately how many words, on the average, are required to fill a given number of column inches of a certain size of type. From experience most of us can tell by looking at a piece of typewritten copy about how many inches it will be in type. Sometimes in writing our own stuff or in editing somebody else's copy we can hit it right on the button, and the type fits the space exactly.

We must admit that this is the exception, however, and usually there is a little tailoring to be done. If the type is just a little short our composing room can "lead out" to fill—a process of slipping very thin strips of lead between paragraphs, around headlines, and in other places where the additional white space will be unnoticed by all but the most observant reader. If the space is too great to lead out, we have to write a few more lines or put another item in on that page.

When the type runs a bit long, the editors have to do some editing on the proof. First attention is given to what around our shop are known as "widows"—very short lines at the ends of paragraphs. By taking out a word or two earlier in the sentence we usually can "kill enough widows" to gain several lines. Sometimes we have to kill a phrase, a whole sentence, or a couple of paragraphs. But it is surprising how many words and phrases can be cut out of most anything without losing any facts or impairing the readability. Most of us use too many words in everything we write, anyway.

Another device is to "tailor" our art work. After we know about how long the type will run we select pictures and order engravings of the proper size to fill the remaining space. At times the size and type of the headline is dictated by the amount of space available.

That's how we make the news print to fit, but even with all these tricks we don't always make every page come out even, and we don't consider it necessary to do so. In our news section we simply "roll" a story to the next page and then start a new one where the first one ends. With our longer engineering articles it is often necessary to "jump" a column or two to a page farther back in the book so we can start another long article at the top of the next page.

The greatest difficulty is where the type must fit the space exactly, as with "Watching Washington," the editorial, or this department. Personally, we find it a lot easier to butcher other people's copy than our own deathless prose. Besides, chopping off the last words of these paragraphs would lose some of our choicest gags.

So we try to write just exactly enough words to fill the space and make the column end right at the bottom of the page, just like this.

—Henry D. Ralph

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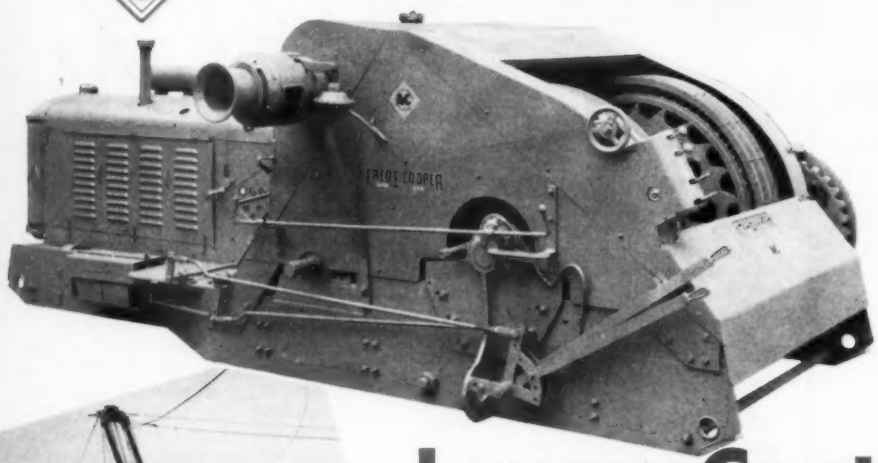

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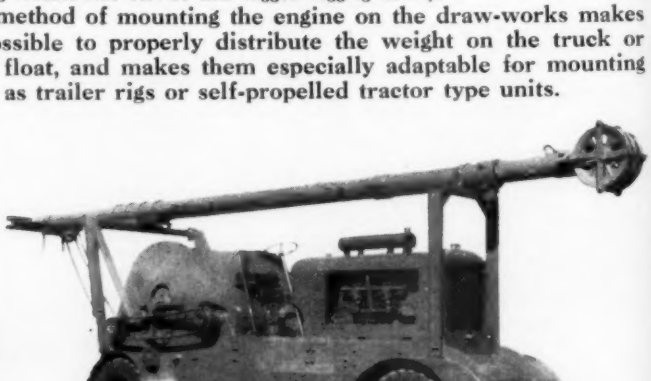

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Underground Defenses

Indicative of how this industry has become accustomed to think in large figures, the announcements of three major pipe-line projects over the past week brought no special reactions. Ten or more years ago any one of the programs would have been a sensation.

One company will enlarge its crude-oil-transmission facilities with 700 miles of 22-in. from Oklahoma to Chicago. A group of five operators will build a 440-mile West Texas-Gulf Coast artery of 24 and 26-inch.

These two lines will cost more than 75 million dollars and will have an initial capacity of 500,000 bbl. daily. To continue the emphasis on bigness, the volume of crude oil which will be in continuous movement in these two lines will be equal in volume to a sizable tank farm.

To the east one of the large natural-gas-transmission companies seeks Federal Power Commission permission to spend 42 million dollars enlarging its system between Texas-Louisiana and Ohio. The announcement routinely explains that the line will provide 200 million cubic feet of capacity.

As this nation and its allies move into another full-scale emergency there could be no developments more important than this enlargement of transportation capacity.

The contention "you can't bomb a pipe line" is not literally true, but compared to the vulnerability of practically all types of aboveground and water transportation the underground pipe line is nearly warproof.

It is to the everlasting credit of pipe-line owners that they started expanding their properties and building entirely new systems as soon as the Government's World War II restrictions were lifted. In many instances the small-inch systems have been replaced with the big-inch.

Great as this postwar growth has been, this is no time for a leveling off in activities. Much remains to be done.

The domestic responsibilities of crude-oil pipe-line operators are 40 per cent greater than they were in 1941 and are growing rapidly. The quicker that facilities for the movement of finished products from refineries and inland water terminals are expanded the better for everyone concerned.

That movement of gasoline and other products which started only 21 years ago aggregated over 600,000 bbl. daily last year. It could be a major contribution to national defenses if this figure were doubled.

Of course we are not overlooking natural-gas transmission. In some respects its growth over the past 5 years dwarfs what has been done with crude-oil and product lines. The increase in natural-gas utility sales last year was an estimated 19 per cent, with a gain of about 70 per cent since 1946.

All divisions of pipe lining have plans for rapid expansion. The carrying out of these programs with full government approval is an essential contribution to this country's emergency and permanent strength.

THIS WEEK

CONTROLS—Substantial headway made during 1950 toward controlling use of vital materials needed in defense production, but next few months will see system of rigid restrictions on end use of materials as nation strips down for speedy rearmament. . . . ¶President warns that complete controls will come eventually. . . . ¶"Super" control agency set up to have authority over all other operating defense agencies. . . .

WASHINGTON—Supreme Court upholds Standard of Indiana's right to lower prices to meet competition, but refers case back to FTC to determine whether company acted in good faith. . . . ¶PAD deputy administrator says pipe-line projects are of vital importance, promises agency's help to companies which are experiencing delays in obtaining materials for construction jobs. . . . ¶President reports to Congress that sacrifices lie ahead as country gears to meet Communist threat. . . . Lays 10-point program for defense before solons. . . .

INDUSTRY—Sinclair pipe-line facilities grouped under one firm, Sinclair Pipe Line Co. . . . It is now the largest pipe-line company in the world in total mileage, and will soon build new 700-mile crude carrier from Drumright, Okla., to Chicago. . . . ¶Texas Gas Transmission Co. announces $42,300,000 expansion program for its natural-gas system. . . . ¶Celebration of fiftieth anniversary of discovery of Spindletop oil field gets under way in Beaumont, with special speakers paying tribute to importance of event. . . . ¶Newly organized Hugoton Plains Gas & Oil Co. will drill 40 new gas wells on its recently acquired properties in the Mid-Continent area. . . .

CANADA—Crude-oil line planned by Alberta Natural Gas Co. from province to Vancouver, B. C. . . . Line would parallel route of company's proposed natural-gas line, dipping into United States before reaching its terminus. . . . ¶Imperial Oil announces big expansion program for Sarnia, Ont., refinery. . . . ¶Contract let by Canadian Oil Refineries for new units at its Froomfield, Ont., plant. . . .

ACTIVITY—Crude production for week ended January 6 averaged 5,712,925 bbl. daily, up 19,375 bbl. daily from previous week. . . . ¶Well completions, reported for the week, totaled 677 compared with 814 for week ended December 30. . . . Wildcat completions were off 76 wells to 97 for the week. . . . ¶Rotary rigs operating in United States on January 1 decreased to 2,293, the first report below 2,300 since early in October. . . .

TRENDS—Distillate production reached a new all-time record for week ended December 30. . . . Total production for the week was 10,024,000 bbl. . . . However, distillate stock withdrawals were less than in any other week in December. . . . ¶Indicated demand for the week was 12,000,000 bbl. compared with 13,000,000 bbl. for previous week and 12,900,000 bbl. for week ended December 16. . . .

L.P.G.—S.A.E. officially recognizes growing importance of liquefied petroleum gas as a motor fuel at symposium held in Detroit. . . . Fuel's performance characteristics, rapidly increasing use of farm tractors, discussed. . . .

INTERNATIONAL—Accord reached between Aramco and Arabian Government allows government up to half of company's net operating revenue. . . . ¶Mexican oil agency taking steps to ease impact of possible shortages of drilling equipment resulting from United States' rearmament program. . . . ¶France, Spain negotiating with Mexico for crude oil. . . . ¶Manabi Exploration Co., Inc., buys Ecuador Oilfields, Ltd. . . . ¶Indonesian refineries push output up to near prewar level. . . .

REFINING—Magnolia Petroleum Co. places second of three T.C.C. units in operation at Beaumont refinery. . . . ¶New process for extracting oil from oil shale announced by Bureau of Mines. . . . ¶Plans to double capacity of polythene-manufacturing facilities of du Pont announced in Orange, Tex. . . . ¶General Petroleum Corp. adds new catalytic polymerization unit to Torrance, Calif., refinery. . . .

HATS OFF TO SPINDLETOP.—This 58-ft. granite shaft honoring the Lucas well and pioneers who opened the Spindletop oil field near Beaumont, Tex., 50 years ago, will be one of the focal points during the industry's observance of the field's fiftieth anniversary. Special celebrations will open in Beaumont this week and continue for several months. Spindletop, opened in 1901, is noted as the birthplace of several large oil companies and the start of the oil industry in the Southwest.

Controls Progress

Substantial headway made during 1950 in controlling use of all vital materials needed in defense production

Bertram F. Linz

WASHINGTON. — Substantial progress toward controlling the civilian consumption of vital materials to provide supplies for defense production was made during 1950, but within the next few months a system of rigid restrictions on the end use of materials will be adopted as the nation strips down for the rigors of speedy rearmament.

The Petroleum Administration for Defense has issued no formal orders so far, preferring to meet such problems as have been encountered by requests for voluntary cooperation by the industry—a method which dealt successfully with a shortage of aviation gasoline experienced by the military last fall and is currently being applied to a shortage of tank cars for liquefied petroleum gas and the need of the Military Sea Transport Service for additional tankers.

Tentative steps.—The Economic Stabilization Agency has taken its first tentative steps toward price and wage controls. It has ordered a rollback of automobile prices and frozen the wages of automobile workers, and has asked industry and trade generally to maintain prices at December 1, 1950, levels and the oil industry specifically to maintain crude prices as of December 8 and product prices as of December 18, which involves efforts to vitiate increases in California and Michigan.

The preponderant bulk of control orders has come from the National Production Authority. Following is a list of NPA actions from the date of its establishment September 11 to December 30:

Reg. 1, September 18: Providing limitations upon inventories of specified materials and products including building materials, chemicals, lumber, iron and steel, aluminum, copper, nickel, tin, zinc, and natural and synthetic rubber.

Reg. 2, October 2 (amended November 16): Establishing a priorities system for defense orders.

Del. 1, October 4 (amended November 1): Delegating authority to the Defense Department and Atomic Energy Commission to assign ratings under the priorities system.

Order M-1, October 12 (amended December 1): Providing for the scheduling of defense (DO) orders for steel, setting the lead time and placing ceilings on the tonnage of orders required to be accepted by steel producers.

Order M-2, October 20 (amended December 11): Limiting the use of natural rubber during November and December 1950, replacing Department of Commerce Order R-1.

Order M-3, October 19: Reserving the entire production of columbium-bearing stainless steels for defense needs.

Interpretation-1, October 24: Interpreting Regulation 2 to permit the Defense Department and Atomic Energy Commission to assign to their petroleum suppliers the right to apply DO ratings to secure drums, cans and other containers, and chemicals required for use in processing petroleum.

Supplement 1, to Order M-1, October 26: Designed to provide steel products for the manufacture of new freight cars, including regular and pressure tank cars, at a rate of not less than 10,000 per month during the first quarter of 1951.

Order M-4, October 26 (amended November 15): Prohibiting the construction of new buildings for amusement, recreation, or entertainment purposes.

Order M-5, October 27: Providing for the scheduling of defense orders for aluminum (similar to Order M-1 for steel).

Reg. 3, November 8: Providing for the extension of the priorities system to Canadian firms doing defense work.

Order M-6, November 8 (amended December 16): Requiring steel producers to allot to domestic warehouse customers and Canadian steel distributors proportionate percentages of their products, to insure supplies for small consumers.

Order M-7, November 13 (amended December 1): Limiting the consumption of aluminum during the first quarter of 1951 to 80 per cent of average consumption during the first 6 months of 1950 for January, 75 per cent for February, and 65 per cent for March.

Order M-8, November 14 (amended December 18): Establishing rules for reporting on inventories, receipts, consumption, imports, and distribution of tin.

Supplement 2, to Order M-1, November 15: Providing steel for the construction of 12 Great Lakes cargo vessels.

Order M-9, November 16: Providing for the scheduling of defense orders for zinc (similar to M-1 and M-5 for steel and aluminum).

Memorandum, November 16: Agreement between NPA and PAD covering allocations and priorities powers over the domestic petroleum and gas industries.

Order M-10, November 30 (amended December 30): Limiting inventories and directing the distribution of cobalt.

Order M-11, November 29: Providing for the scheduling of defense orders for copper and copper-base alloys (similar to M-9 for zinc).

Order M-12, November 29: Limiting nondefense production and use of brass mill and copper wire mill products to 85 per cent in January and February and 80 per cent in March 1951 of the average production and use during the first 6 months of 1950.

Order M-13, December 1: Providing for the scheduling of defense orders for rayon yarn (similar to M-11 for copper).

Order M-14, December 1: Limiting nondefense consumption of primary nickel during the first quarter of 1951 to 65 per cent of the average consumption during the first 6 months of 1950.

Order M-15, December 1: Limiting the nondefense production and use of zinc products beginning January 1, 1951, to an average quarterly rate of 80 per cent of the production or use during the first 6 months of 1950.

Order M-16, December 11 (amended December 18): Prohibiting the processing of copper scrap by others than producers of copper raw materials, and limiting inventories of scrap dealers.

Order M-17, December 18: Providing for the scheduling of defense orders for certain electrical components and parts for communications systems.

Order M-18, December 21: Regulating the distribution of hog bristles, used in the production of paint and varnish brushes.

Order M-19, December 27: Limiting the end uses of cadmium.

Notice 1, December 27: Listing materials subject to the antihoarding provisions of the Defense Production Act, prohibiting the accumulation of inventories in excess of reasonable demands of business or for the purpose of resale at prices in excess of prevailing market prices, including certain building materials, iron and steel products, and scrap.

Amendment 2, to Order M-2, December 29: Making the General Services Administration sole importer of crude natural rubber and latex.

Amendment 1, to Order M-12, December 30: Limiting the end uses of copper and copper-base alloys.

'Super' Control Agency

Newly formed Defense Production Administration will have authority over all operating defense agencies

WASHINGTON.—President Truman created another emergency agency last week with authority over all the operating defense agencies, the first step toward their merger in one organization if any when Congress grants reorganization powers that have been requested.

The new agency is the Defense Production Administration, rating just below the Office of Defense Mobilization, and its director, former National Production Authority chief, William H. Harrison, will have authority over NPA, the Petroleum Administration for Defense, and other agencies established by the President last September.

For the time being, PAD will remain in the Interior Department, as will the four other agencies set up by Secretary Oscar L. Chapman; NPA will stay in the Department of Commerce, and the Defense Transportation Agency will remain with the Interstate Commerce Commission.

Reporting directly to Charles E. Wilson, director of the ODM, Harrison's DPA will handle all planning and programing of military and essential civilian production. NPA, PAD, and other agencies will continue to be the operating production organizations.

Defense board.—Coincident with announcement of the DPA, the President established a Defense Mobilization Board in the ODM, to serve in an advisory capacity, and named as its members Wilson, the secretaries of Defense, Treasury, Interior, Commerce, Agriculture, and Labor, chairmen of the Reconstruction Finance Corp., the board of governors of the Federal Reserve System, and the National Security Resources Board.

The DPA will provide coordination and direction to the production phase of the mobilization program, and Harrison will have all of the powers over priorities, allocation of materials, requisitioning, loans, purchasing, and certification of accelerated tax amortization formerly spread among a number of agencies.

Wilson explained that under the new setup the ODM will determine general policies and the DPA will be the programing agency, but the administrative functions which the operating agencies have been performing will be redelegated back to them.

PAD status.—The President's order and action previously taken by Chapman gave rise to questions regarding the status of PAD which, however, Deputy Administrator Bruce K. Brown said, will not be affected in any important way.

Under the order, DPA if it wished could deprive PAD of all authority and make it nothing more than an operating branch with no power over priorities, allocation, voluntary agreements, or expansion of production, capacity, and supply. In view of Wilson's assurance that his authority would be redelegated back to Chapman, this is not likely to occur, but it could, especially in view of the specific instruction by the President that the defense-production administrator shall make determinations as to the provision of adequate facilities for defense production and lay down the production programs required to meet defense needs.

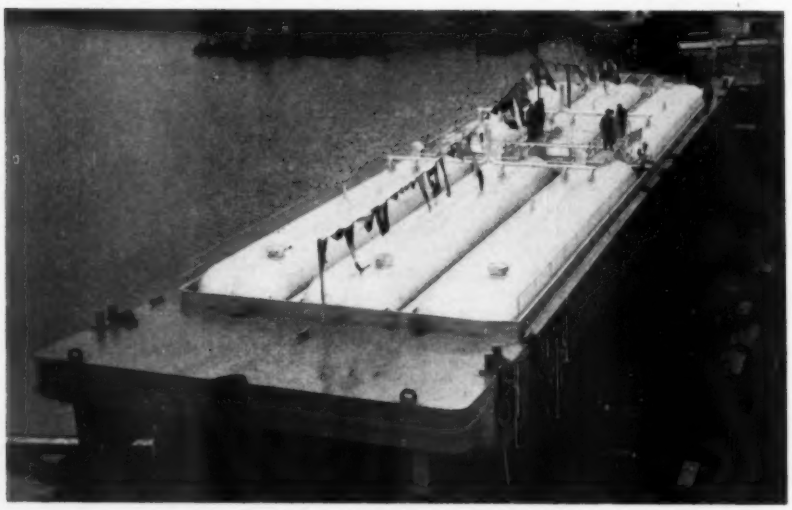
Considered by industry observers to be more important, however, was Chapman's action last month amending his order of October 3 establishing PAD.

Change necessary.—The original order made the deputy administrator responsible "only to the administrator," but the amendment made him responsible to the secretary. Brown explained that this change was found necessary because of the fact that certain powers were delegated by the President to the Secretary of the Interior and may legally be exercised by Chapman only in that capacity and not as petroleum administrator.

A second change eliminated a provision that "in the absence of the administrator, the deputy administrator shall serve as acting administrator." Brown explained that this was in line with the first change and was necessitated by the same conditions of governmental procedure, since in the absence of the secretary his authority is exercised by the acting secretary and cannot be delegated.

Independent agency.—Brown also dismissed as of little consequence a third change, eliminating a sentence stipulating that "the Petroleum Administration for Defense shall operate as an independent agency." He explained that "independent" as used here was intended to show that PAD would be separate from other branches of the department and the provision was deleted because it could be construed as setting the agency up on a basis of independence such as is enjoyed by the Federal Power and Interstate Commerce commissions which are classified as "independent agencies."

Brown expressed the opinion that the defense organization in its recent changes is tending to follow more closely the setup of the World War II organization and that PAD will continue to operate as did PAW. The difference, he said, is that PAD was created by executive order and never was tied in to the Interior Department whereas PAD was created by Chapman and must be a part of the department, although it can be kept separate from other divisions and operate pretty much as an "independent" agency.



L.P.G. Barge Christened

The "City of Mobile," first barge ever designed and constructed for transportation of propane and other liquefied petroleum gases, was christened recently at the Beaumont, Tex., shipyards of Bethlehem Steel Co. The barge, to be operated by Warren Maritime Corp., subsidiary of Warren Petroleum Corp., contains six multicylinder tanks of a new design which will carry a larger volume than conventional cylindrical tanks. Combined capacity is in excess of 320,000 gal., equivalent to 30 railroad tank cars.

WATCHING WASHINGTON

Bertram F. Linz

Top Steel Producer

United States steel producers didn't quite make the 100,000,000-ton mark last year, but their 96,954,000-ton output was only 123,000 tons short of half the world output of 194,154,000 tons and more than 3½ times the Russian production of 26,500,000 tons, according to industry figures.

While these figures demonstrate the strength of the domestic industry, the main point is that great as the output has grown there still isn't enough steel to meet all demands, as evidenced by shortages of tubular goods and containers, and must be expanded still further and quickly.

Steel-industry estimates place productive capacity by the end of this year at something over 103,000,000 tons, but actual production for 1951 will be something under that figure. But military requirements, plus civilian demand, plus special programs for freight cars, barges, ships, and so on, will strain capacity to the limit.

Oil-industry estimates of its steel needs call for about 11 per cent of the anticipated output, about 8 per cent for oil and gas drilling and transportation domestically and 3 per cent for refining, marketing and foreign operations.

Coalition Control

The new Eighty-second Congress lost no time last week in showing President Truman that the slim administration paper majorities in House and Senate are impotent and that it will be controlled by a coalition of Republicans and southern democrats.

On the first day of the session, a top-heavy coalition vote in the House overrode administration forces to restore to the Rules Committee the power to pigeonhole legislation of which it was deprived 2 years ago in retaliation against the southern insurgents. Like many of the other important committees on both sides of the Capitol, the Rules Committee is headed by a southerner.

In the Senate, an effort to have a northerner, Joseph C. O'Mahoney of Wyoming, made majority leader was squelched and a southerner, Ernest W. McFarland of Arizona, won the post with fellow-southerner Lyndon B. Johnson of Texas elected Democratic whip. In the last Congress northerners held both posts, Scott W. Lucas of Illinois being leader and Francis J. Myers of Pennsylvania as whip. Both were defeated for reelection last November.

Alphabet 'Soup'

If there hadn't been an alphabet the Government would have had to invent one if for no other purpose than to designate the wartime agencies.

Readers throughout the country must be mystified by the "call letters" of dozens of government agencies which resemble nothing so much as broadcasting stations and indeed follow the radio technique of spraying the air with announcements of their activities.

The list of emergency agencies already is impressive and is steadily growing—two new ones were added recently, one last month and one last week — and maybe it's about time to let the industry in on what some of the letter combinations stand for.

At the head of the list is the ODM, Office of Defense Mobilization, set up last month, and immediately under it the DPA, Defense Production Administration, created last week. Under DPA come the various operating agencies such as NPA, National Production Authority; PAD, Petroleum Administration for Defense; DTA, Defense Transportation Agency; DMA, Defense Minerals Administration; DPA, Defense Power Administration; DSFA, Defense Solid Fuels Administration, and DFA, Defense Fisheries Administration.

There are also ESA, the Economic Stabilization Agency, and its two components, OPS, Office of Price Stabilization, and WSB, the Wage Stabilization Board. And a lot of permanent agencies are tied into the defense program, such as the RFC, Reconstruction Finance Corp., which will make loans for defense facilities; NSRB, National Security Resources Board, which has a hand in defense planning; APC, Alien Property Custodian, who "vests" or takes over for the Government the assets in the United States of nationals of countries with which we are or have been at war; FPC, the Federal Power Commission, which will have to pass on natural-gas-transmission lines that may have to secure allocations of pipe and materials from other agencies, and the OIT, Office of International Trade, which directs the export control act.

With this brief concordance of cabalistic combinations it may be possible for the average citizen to read his newspaper with some degree of understanding.

Complete Controls

They will come eventually, President warns country

WASHINGTON.—President Truman warned the country last week that complete price and wage controls will be imposed eventually, but neither he nor Economic Stabilization Agency officials would hazard a guess how soon "eventually" might be.

By inference the President indicated that the curbs would come as soon as the Price Stabilization Office is fully organized—about April 1—but the ESA refused to concede they would not be imposed earlier, if necessary, or delayed after that date.

Besides the necessity of fully staffing the control agency, across-the-board restrictions could not be imposed until Congress acts to bring agricultural prices into the picture. Under the Defense Production Act the freezing of farm prices below parity is prohibited and most agricultural products are below parity.

Selective action.—Pending a decision to go all-out on price and wage controls, the administration will attempt to deal with the situation by selective action such as the rollback ordered last month in the price of 1951 model automobiles. So far, the ESA has attempted to keep oil prices stable by voluntary action on the part of the industry and currently appears satisfied with the situation, but a mandatory order reportedly has been prepared for quick issuance in the event of a break through present ceilings.

Meanwhile, organized labor has warned the administration that it will resist wage control unless at the same time all prices, including foods, are regulated, and ESA's wage-stabilization board met this week with labor leaders and industrialists in an effort to develop a practical stabilization policy for wages. As the group met there was convincing support for labor's position—a recent rise in meat prices which carried beef to as high as $1.59 a pound in some Washington stores.

Tanker rates.—Price-stabilization officials currently are concerned over tanker rates which, according to numerous complaints from New York and New England, are making it difficult to maintain product prices at their December 18 level.

Petroleum administration officials have suggested that the question be suspended to let the tanker situation settle down before acting to stabilize rates, which would involve some difficulties in view of the fact that a large part of the oil imported arrives in foreign-flag vessels. Under the Defense Production Act, the Government could stabilize rates for American flag tankers but could not touch those under foreign flag.

Congressional Bills

Only a few of measures introduced apply to oil

WASHINGTON. — More than 1,000 measures were introduced in the first day of the new Congress, creating such a traffic jam that several days were required for their listing in the Congressional Record.

Most of these measures are fated to wither on the vine before Congress adjourns late in 1951, but by that time thousands more will have been introduced as well—the total for the last Congress was some 16,650.

Only a handful of measures applying to the oil industry were among those submitted at the opening of the session, among them the following:

Gasoline taxes: HR 52 by Rep. Curtis of Nebraska, to refund the federal tax paid on gasoline destroyed by fire or other casualty while held for resale by a jobber, wholesaler, or retail dealer; HR 136 by King of California, to allow consumers to deduct state gasoline taxes for income-tax purposes.

Import tax: HR 93 by Rep. Jenkins of Ohio, to increase the tax.

Leasing: HR 436 by Rep. Williams of Mississippi, to require competitive bids for oil and gas leases on acquired lands.

Natural gas: HR 88 by Rep. Heselton of Massachusetts, to authorize the Federal Power Commission to prescribe safety requirements for natural-gas companies.

Reciprocal trade agreements: HR 86 by Rep. Hand of New Jersey, to require approval of agreements by Congress; H. Con. Res. 3, also by Hand, to rescind all tariff agreements with foreign countries controlled by a communist party.

Synthetic liquid fuel: HR 90 by Rep. Jenkins of Ohio, to establish an experiment station in the Hocking Valley coal region for research on production, refining, transportation, and use of petroleum from coal and oil shale; HR 279 by Rep. Ramsay of West Virginia, to promote the production and stockpiling of synthetic liquid fuels.

Tidelands: HR 58 by Rep. Doyle of California, HR 266 by Poulson of California, and HR 415 by Werdel of California, to confirm and establish the titles of the states.

President's Message

He lays 10-point program for defense before solons

WASHINGTON.—President Truman warned this week of the "deadly challenge" of communism and laid before Congress a 10-point program of legislation for the expansion of our military and industrial strength to meet it.

Delivering his annual message before the new Congress January 8, the President rebuffed isolationist proposals that this country drop its efforts to protect the other free nations, pointing out that unchecked expansion of communism would leave the United States hemmed in by enemies.

If Western Europe were to fall to Russia, he declared, it would double the Soviet supply of coal and triple its supply of steel, while if the free countries of Asia and Africa should fall we would lose the sources of many of our most vital raw materials, specifically uranium and inferentially oil, rubber, and tin.

Included in the President's legislative program are economic and military aid to the rest of the free world; expansion of our own military strength; revision and extension of the authority to expand production and stabilize prices and wages; a major increase in taxes to meet the cost of the defense effort; and improvement of the labor laws to insure steady production in the emergency.

Sacrifices ahead. — The President warned that the defense program, which he split into two parts, will involve sacrifice and maximum effort.

"The first part is to get our defense production going as fast as possible," he said, "we have to convert plants and channel materials to defense production.

"This means heavy cuts in the civilian use of copper, aluminum, rubber, and other essential materials. It means shortages in various consumer goods.

"The second part is to increase our capacity to produce and to keep our economy strong for the long pull. We do not know how long communist propaganda will threaten the world.

"Only by increasing our output can we carry the burden of preparedness for an indefinite period in the future. This means that we will have to build more power plants and more steel mills, grow more cotton, mine more copper, and expand our capacity in many other ways."

Assistance Offered

PAD will aid in getting materials for pipe lines

WASHINGTON. — The Petroleum Administration for Defense last week offered to assist pipe-line builders who experienced or anticipate a delay in construction because of failure to receive materials on schedule.

The offer was made by Deputy Administrator Bruce K. Brown, who said a complete transportation study is about to be undertaken to determine what oil and gas pipe lines are most essential to the domestic economy and the national defense and that, pending the completion of that study, no action will be taken on a number of proposed pipe-line projects now before the agency for consideration.

Brown said PAD would like to be advised of any lines now under construction which are or expect to be slowed down by failure to receive materials.

Pricing Decision

Indiana Standard's right to reduce prices upheld

WASHINGTON.—Right of a seller to reduce his prices in good faith to meet those of a competitor was upheld this week by the Supreme Court.

By an 8-to-3 decision, the court held invalid the Federal Trade Commission's order against Standard Oil Co. (Ind.), reversing a decision by the Seventh Circuit Court of Appeals which was instructed to remand the order to the commission for action in line with the high court's findings.

The case involved a charge by the commission that Standard had violated the Robinson-Patman Act in granting to four of its customers who also sold at retail lower prices for gasoline than were charged to other retail outlets.

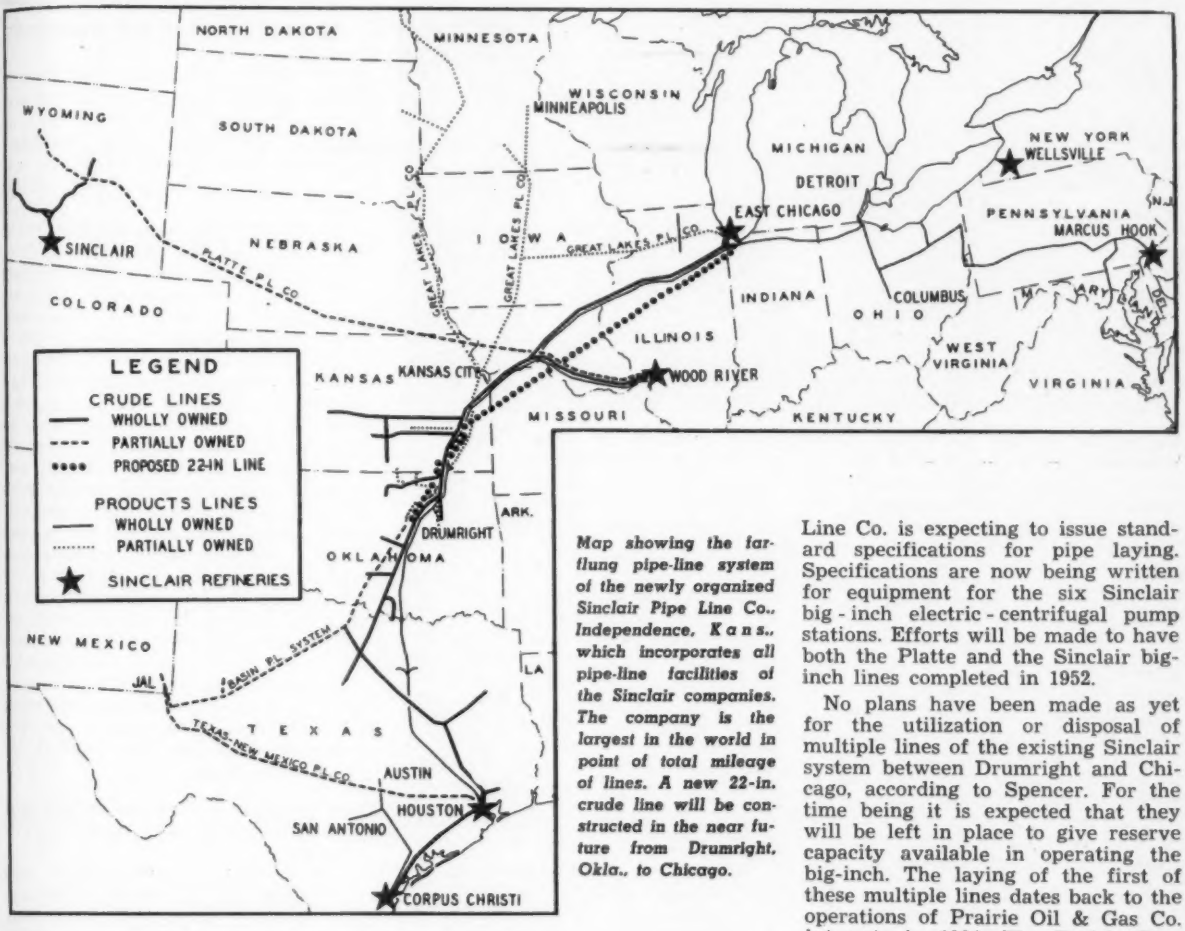
The company contended that it had reduced its prices in these instances in good faith to meet the lower prices of a competitor, but the commission held that the reasons for that action were immaterial because the practice discriminated between buyers and injured competition.

Opinion read.—Delivering the majority opinion of the court, Associate Justice Harold H. Burton declared: "It is enough to say that Congress did not seek by the Robinson-Patman Act either to abolish competition or so radically to curtail it that a seller would have no substantial right to self-defense against a price paid by a competitor.

"For example," Burton continued, "if a large customer requests his seller to meet a temptingly lower price offered to him by one of his seller's competitors, the seller may well find it essential, as a matter of business survival, to meet the price reduction rather than lose the customer."

The issue.—The Supreme Court majority directed that the Standard case be sent back to the commission for findings on the good-faith question. Burton specified that if good faith was found, the price cuts could be made.

"We agree with petitioner (Standard)," Burton said, "that under the Robinson-Patman Act, the lower price to the jobbers was justified if it was made to retain each of them as a customer and in good faith to meet an equally low price of a competitor."



Map showing the far-flung pipe-line system of the newly organized Sinclair Pipe Line Co., Independence, Kans., which incorporates all pipe-line facilities of the Sinclair companies. The company is the largest in the world in point of total mileage of lines. A new 22-in. crude line will be constructed in the near future from Drumright, Okla., to Chicago.

New Pipe-Line Company

All Sinclair crude, product lines put under one firm, making it world's largest system; big crude line planned

Paul Reed

INDEPENDENCE, Kans.—Organization of the new $100,000,000 Sinclair Pipe Line Co. to take over all Sinclair pipe-line facilities and operations was announced here last week by P. C. Spencer, president of Sinclair Oil Corp. The new company will be headed by R. J. Tibbetts, and will have its headquarters in Independence.

Sinclair's pipe-line facilities, comprising 13,495 miles of crude-oil and products lines, have the largest mileage of any petroleum system in the world.

At the same time Spencer announced plans for construction of a 700-mile, 22-in. crude-oil line from Drumright, Okla., to Chicago, to cost $48,000,000. With six pump stations, this big-inch line will have a capacity of 145,000 bbl. daily.

Existing crude-oil and products lines transferred from Sinclair Refining Co. to the new company are valued at $80,000,000. In the near future Sinclair Pipe Line Co. will acquire all of the Sinclair working interest and ownership in other pipe-line systems, valued at $30,000,000. These include those of Texas-New Mexico Pipe Line Co., Basin Pipe Line System, Great Lakes Pipe Line Co., and Platte Pipe Line Co.

New line.—Construction will start this summer on the first of three segments of the Drumright-Chicago crude line. The first segment will extend from the company's Manuel Station at Drumright to Shannondale, Mo., where it will have a connection with the Platte Pipe Line Co. crude-oil system from Worland, Wyo., to Wood River, Ill., also to be under construction this year. Sinclair Pipe Line Co. is expecting to issue standard specifications for pipe laying. Specifications are now being written for equipment for the six Sinclair big-inch electric-centrifugal pump stations. Efforts will be made to have both the Platte and the Sinclair big-inch lines completed in 1952.

No plans have been made as yet for the utilization or disposal of multiple lines of the existing Sinclair system between Drumright and Chicago, according to Spencer. For the time being it is expected that they will be left in place to give reserve capacity available in operating the big-inch. The laying of the first of these multiple lines dates back to the operations of Prairie Oil & Gas Co. interests in 1904. The Prairie Pipe Line Co. system became Sinclair property in the early 1930s.

Platte job.—Platte Pipe Line Co. opened bids on January 10 for construction of the $60,000,000, 1,080-mile system from Worland, Wyo., to Wood River, Ill., on which work will start in February or March. Surveying for the line is being carried on through this winter. The Platte system consists of two sections: Worland-Casper, 140 miles, 16-in.; and Casper-Wood River, 940 miles, 20-in. Because of the 1-mile drop in elevation between Casper and Wood River, it will be possible to pump at the initial 73,000 bbl. daily capacity with only two stations. The line will be filled with oil valued at $3,000,000 belonging to the companies owning the Platte system. These comprise Sinclair, Continental Oil Co., Ohio Oil Co., Pure Oil Co., and British-American Oil Producing Co. Platte officers include Henry Phillips, president; R. F. Moore, vice president and manager; and Frank Havens, treasurer. Directors who are not officers include George Evans, Continental Oil Co., and O. F. Moore, Ohio Oil Co. Dale Heltzel, from the Continental Oil Co.

Officers and directors of the newly formed Sinclair Pipe Line Co. Seated, left to right: William H. Morris, vice president and director; R. J. Tibbets, president and director; and Alex M. Stafford, vice president and director. Standing, left to right: Harold T. Wint, assistant secretary-treasurer; Lewis B. Moon, vice president and director; John T. Main, secretary-treasurer and director; and Robert C. Beardon and Charles Fitzgerald, vice presidents.

staff, is counsel. Main offices of the Platte company have been established in the Sinclair Building here.

Products system. — This week the products system of Sinclair Pipe Line Co. will begin a unique movement from Wood River, Ill., westward to Stafford Springs, Mo., junction near Carrollton, and thence northeast to Chicago. This will be the first pipeline shipment to Chicago from the refinery acquired by Sinclair interests from Wood River Oil & Refining Co.

Present facilities.—The present 13,495-mile Sinclair Pipe Line Co. system, formerly operated as a department of Sinclair Refining Co., comprises 5,084 miles of crude-oil trunk lines, 5,576 miles of crude-oil gathering lines, and 2,835 miles of products lines. The products lines extend continuously from Marcus Hook, Pa., via Chicago to Houston. Last year these crude-oil and products lines delivered approximately 125,000,000 bbl.

Directors of Sinclair Pipe Line are drawn mainly from the present staff of the pipe-line organization. Officers elected last week are: Tibbetts, president; William H. Morris, Alex M. Stafford, and Lewis B. Moon, vice presidents and directors; Robert C. Beardon and Charles Fitzgerald, vice presidents; John P. Main, secretary-treasurer and director; and Harold T. Wint, assistant secretary and assistant treasurer. W. H. McBrayer is counsel and A. Moffit, auditor.

The occasion of Spencer's announcement was a luncheon at Memorial Hall here attended by Frank Hagaman, former governor of Kansas, Sinclair executives and superintendents, and executives of other oil companies and petroleum pipe-line companies. Approximately 300 guests attended. Independence was the early home of Harry F. Sinclair and today it is regarded as the "cradle" of both Sinclair operations and those of the Prairie companies.

Oil-company and pipe-line executives who attended a luncheon at Independence, Kans., last week in connection with announcement of the formation of Sinclair Pipe Line Co. Left to right: J. Marston Linehan, president, Mid-Continent Pipe Line Co.; J. L. Burke, president, Service Pipe Line Co.; A. C. Sailstad, president, Stanolind Crude Oil Purchasing Co.; J. L. Seger, executive vice president, Interstate Oil Pipe Line Co.; and R. O. Dietler, chairman of the board of directors, Stanolind Crude Oil Purchasing Co.

Texas Gas Expansion

Firm to spend $42,300,000 to meet increased demands

NEW YORK.—A $42,300,000 pipeline-construction program designed to meet increasing needs for natural gas in its own Middle West and Appalachian market area has been announced by Texas Gas Transmission Corp.

W. T. Stevenson, executive vice president, said the company is asking the Federal Power Commission for authority to build 580 miles of large-diameter line and necessary compressor stations. These facilities would enable the company to increase its daily deliveries by more than 200,000,000 cu. ft. daily and raise total capacity of its Texas-Ohio system to more than 900,000,000 cu. ft. daily.

At the same time, Texas Gas announced it has developed new sources of gas in southern Louisiana that will assist in supporting its expansion. Some time ago, the company acquired Louisiana Natural Gas Corp. which operates a gathering system in southwestern Louisiana of about 110 miles and now distributes about 100,000,000 cu. ft. daily to industrial customers in the Lake Charles area. Texas Gas said it also has organized Texas Northern Gas Corp. to provide a second gas-gathering network in southwestern Louisiana.

New program. — The company's new construction program includes the following:

1. A total of 372 miles of 26-in. loop along its present system from Bastrop, La., to Hardinsburg, Ky., including two lines under the Mississippi River.

2. A 195-mile line connecting the gas-gathering subsidiaries in the Gulf Coast region of southwestern Louisiana with the company's 26-in. main line in the northeastern part of the state.

3. The addition of 13,740 compressor horsepower, including a new 4,400 hp. station near Madison, Ind.

Texas Gas said construction work on the new facilities could be started not later than 60 days after authorization by FPC and that deliveries could begin about January 1, 1952. Firm-delivery capacity of the company's 2,400-mile system exceeds 660,000,000 cu. ft. daily, and, the company told FPC, beyond 1951, additional pipe-line capacity must be provided to meet demands if severe future curtailment is to be avoided.

More gas needed.—Industrial development is being accelerated throughout the Midwest territory the company serves and additional gas is urgently required to meet the needs of plants and labor forces devoted to the production of military equipment, Texas Gas said. In addition to supplying present customers in Louisi-

ana, Arkansas, Mississippi, Tennessee, Kentucky, Indiana, and eastern Illinois, the company will be able to sell 95,000,000 cu. ft. daily to Ohio Fuel Gas Co., which serves communities throughout Ohio. Texas Gas plans to finance its expansion project through the sale of first-mortgage bonds, other securities, and cash on hand.

New Corrosion Plan

Exposure-test-site system remodeled by A.S.T.M.

PHILADELPHIA.—A new approach to the problem of combating corrosion has been launched by the American Society for Testing Materials, replacing the haphazard and unwieldly system used for many years.

Atmospheric-exposure tests are being concentrated at seven sites, carefully selected for specific types of corrosion, and all studies will be coordinated through a central committee.

Formerly various committees of A.S.T.M. utilized 22 exposure sites with no central direction, which caused some duplication and overlapping and left some corrosion problems unstudied. In addition, some of the old sites became too small with no room for expansion, had to be abandoned because of industrial encroachment, or were reclaimed by the owners.

New sites.—New test sites will be located to encounter all types of atmospheres—from tropical conditions in the Canal Zone to a frigid climate in Canada—made available through cooperation of the National Research Council of Canada.

Testing stations will also be set up in New York City to determine the effects of an industrial atmosphere on materials; in Columbus, Ohio, to encounter semiindustrial conditions; at Pennsylvania State College for rural atmospheric effects; and at Kure Beach, N. C.; Port Aransas, Tex.; and Point Reyes, Calif.; where seacoast atmospheres prevail.

Deterioration losses. — A.S.T.M. estimates that more than a billion dollars is lost each year due to corrosion of metals, and that the effects of atmospheric deterioration on plastics, rubber, textiles, wood, and other engineering materials would more than double this figure. The new test sites will be equipped to provide information on these materials as well as on paints, ceramics, adhesives, and "composite" constructions.

The long-range program on exposure tests also includes the establishment of several underwater sites. Tentative arrangements have been made for the use of a part of the seawater basin used by International Nickel Co. at Wrightsville, N. C.

Program cost.—The advisory committee has estimated that the cost of acquiring, maintaining, and supervising the A.S.T.M. exposure-test sites for the first 10 years will be at least $100,000, including the cost of equipping the sites with all test facilities.

About $50,000 already has been pledged by 19 companies, including Standard Oil Development Co., Gulf Research & Development Co., several steel companies, and other industrial firms. Invitations are now being extended to several hundred other companies who find the results of materials tests of direct value.

New Headquarters Building

This newly opened office building of British American Oil Co., Ltd., in Toronto will serve as the central headquarters for more than 650 employes of the Ontario division. The building is 215 by 110 ft., and encloses 2,500,000 cu. ft. of space. British American occupies the top four floors and the penthouse.

L.P.G. Recognition

S.A.E. officially notes as an important development the growing use of liquefied petroleum gas for motor fuel

George Weber

DETROIT.—The growing use of liquefied petroleum gas for motor fuel was officially recognized as an important modern development this week by the Society of Automotive Engineers, convening here for its annual meeting. In a symposium held on January 8, the topic of L.P. gas as tractor and automotive fuel was discussed in three papers dealing with supply, distribution, adaptation, and operation.

Other subjects in the week-long program proved of interest to oil-industry representatives. The relationship between engines and fuels was reviewed in the Horning Memorial Lecture by D. P. Barnard of Standard Oil Co. (Ind.), who is honored this year as recipient of the Horning Memorial Medal.

Trends in motor-fuel volatility were outlined in a comprehensive paper presented by W. M. Holaday and D. P. Heath of Socony-Vacuum Oil Co., Inc. In a fuels and lubricants session held early in the week, heavy-duty oils were evaluated in a joint paper authored by representatives of Shell Oil Co. and Caterpillar Tractor Co. On the same program was a report by Standard Oil Development Co. representatives on motor-gasoline and carburetor-icing tendency.

L.P. gas.—In introducing the lively topic of L.P. gas for motor fuel, R. C. Alden and F. E. Selim of Phillips Petroleum Co. admitted that the idea of seeking large-scale motor fuel market for L.P.G. was almost as new and startling to the petroleum industry as it is to the automotive industry. Customer demand is growing rapidly, however, and the authors cited figures on sales of L.P.G. conversion units for farm tractors. From 25,300 in 1948, such sales rose to 37,200 in 1949 and the estimate of units converted in 1950 is in excess of 100,000. This is equivalent to 22 per cent of the 1949 domestic shipments of wheel-type tractors for farm use.

An important factor to consider in converting tractors, buses, and trucks to the uniform, clean-burning, high-octane fuel is the potential supply and availability of L.P.G. Alden and Selim estimate that of the future annual production of from 600 to 730 million barrels of L.P.G., the demands for chemicals, industry, and domestic heating needs, coupled with the total uses for refinery feed stock and gasoline blending, will represent in aggregate, about 340 million barrels. This makes available an estimated 260 to 390 million barrels of L.P.G. for use as direct motor fuel. The authors went further in estimating that the

total potential supply of this product will reach 915 million barrels per year. In the year 1960 their estimate is for a 580-million-barrel production with a potential production of 888 million barrels if all L.P.G. was extracted from all natural gas and refinery gases produced.

Distribution.—Concerning distribution, Alden and Selim reported that about 10,000 L.P.G. tank cars are now in use and 2,500 are on order. Truck transportation which moves about half as much Phillips L.P.G. as tank cars is increasing even faster, they stated. They cited two pipe lines handling propane and butane and others moving the latter. Two deep-water tankers are in service moving L.P.G. to the East Coast and to South America and an L.P.G. barge for inland water movement is due to be launched shortly.

The authors concluded that "the automotive and petroleum industries are confronted with a large potential production of L.P. gas, a nearly ideal motor fuel, at manufacturing costs several cents per gallon under gasoline." In a national emergency, as an additional supply of motor fuel, they stated that L.P.G. could cushion the essential civilian demands and improve military products. As a means of conserving petroleum its use as motor fuel can have a substantial effect.

Adaptation requirements. — In addition to the obvious changes needed in carburetion in adapting engines to L.P.G. operation, A. J. St. George of Ensign Carburetor Co. pointed to numerous other design changes which will be necessary before the full utilization of L.P.G. can be realized. "It is not unreasonable to think that investigation of combustion-chamber design, spark-plug location, valve timing, valve, and port sizes might well be in order," he said.

Marvin J. Samuelson of Minneapolis-Moline Co. reported on comparative tests run on tractor engines, using gasoline and L.P.G. gasolines of 70 and 91-octane-number ratings were tested in engines with compression ratios of 5.4-1 and 5.65-1 respectively. Four butane-propane mixtures were run at compression ratios of 5.4, 6.0, 7.0 and 8.0 to 1 and pure propane was tested in an engine with a ratio of 9.0 to 1. In general, it was found that fuel consumption of L.P.G. in gallons per horsepower hour declined with the load. At operating maximum load, rated load and 75, 50, and 25 per cent load the L.P.G. fuel at compression ratios of 5.4 and 6.0 to 1 showed higher consumption. At fractional loads the propane-rich mixture and pure propane fuel used in the 8.0 and 9.0 to 1 compression ratio engines showed lower fuel consumption than either of the gasolines.

Gasoline trends.—In his Horning Memorial Lecture, Dr. Barnard reviewed the past developments in improving motor-fuel quality and cited the increasing degree of cooperation existing between the petroleum and automotive industries. He showed that the ratio of price to quality has declined steadily in the past 30 years. At the present stage of high-octane fuels he warned the automotive industry that further advances in gasoline antiknock quality will be slow and expensive.

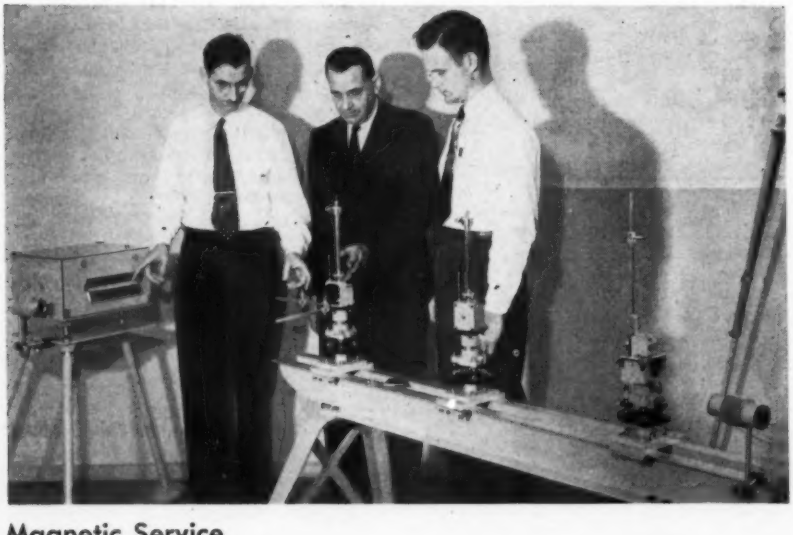
"Now, in 1950, catalytic cracking seems to have reached about the maximum use consistent with the present extent of refinery operations," he said. "Together with the various other processes for improving octane number, it has brought regular-grade gasolines up to around 83 research octane number, and the premium grades to around 90." The costs and possible crude losses incident to going much beyond this level are such that they can only be justified by significant improvements in vehicle efficiency.

Possible future steps.—Barnard then reviewed the avenues open to further octane improvement in motor fuels. The highest-octane isoparaffins must be made synthetically and large quantity production is inherently high. The light cycloparaffins cannot be synthesized in large quantities by any process now in sight. Olefins, produced on a large scale by cracking, have proved to be excellent motor fuels. Aromatics, he said, constitute the chief class of hydrocarbons on which to focus future process development. For increasing aromatic production, catalytic reforming, more accurately described as catalytic dehydrogenation, works best on the lighter fractions and on feeds of high-cycloparaffin content. The new nonregenerative catalytic reforming processes now in use and under development offer real operating advantages, he said, but essentially duplicate the product composition of older catalytic reforming processes.

Volatility trends.—Motor-fuel volatility is still an important factor in the over-all fuel-engine relationship, Holaday and Heath said in their study of volatility trends. The authors have charted the probable trends for the next 5 to 10 years. They indicate that volatility will increase.

The underlying reasons for the expected changes in volatility are the trend toward rapidly increasing utilization of catalytic cracking and catalytic reforming, and the drive towards more efficient utilization of the potential energy in the nation's petroleum resources.

"It is believed that specific engine and fuel-system design changes can and should be made by the automotive industry to minimize the problems which could otherwise be quite disturbing to the motoring public," the authors said. At the same time, they stated that the petroleum industry has a definite and clear-cut responsibility to make possible these design changes by producing and marketing gasolines which do not show wide deviations in volatility.



Magnetic Service

Geophysical operators can now get daily checks on the earth's magnetic field from the new magnetic observatory operated by the University of Houston under the auspices of the U. S. Coast and Geodetic Survey. The only other such observatories in the United States are at Washington, D. C., and Tucson, Ariz., too remote to give reliable information for the Gulf Coast and Mid-Continent. The equipment was built and donated by Ruska Instrument Corp., Houston. Some of it is shown here being checked at the plant by Walter Ruska, E. Lenzner, and William Luton.

Spindletop Anniversary

Beaumont becomes 'oil capital of the world' as industry leaders convene to observe fiftieth anniversary of pool

Leigh S. McCaslin, Jr.

BEAUMONT.—This city of 100,000 was the "oil capital of the world" this week, Tulsa and Houston notwithstanding.

Oil men from throughout the country gathered in Beaumont for an action-packed 6-day celebration commemorating the fiftieth anniversary of the Spindletop oil field. Spindletop is regarded in oil history as the place "where oil became an industry." Drake had brought in the first commercial United States oil well some 40 years earlier in Pennsylvania. However, the Lucas gusher which heralded Spindletop was the world's first large-producing oil well.

A well making 50 bbl. a day was considered a real oil well until that January 10 in 1901 when the Lucas well blew in. With a roar which driller Al Hamill described as "the sound of a cannon shot," the Lucas well started pouring forth oil at the rate of 75,000 to 100,000 bbl. a day. A bewildered farmer started to town (Beaumont) complaining to everyone he met that "the dang stuff's killin' my corn." Newspapers called it "the hottest news since Sam Houston took the Mexican Army at San Jacinto," and the railroads brought special trains of sightseers from points as far distant as Chicago and New York to see the spectacle.

"Big business."—It was at Spindletop that oil really became "big business." The founding of major oil companies, such as Gulf, Texas, Humble, and Magnolia is closely tied to the Spindletop discovery. Spindletop is significant, too, because it indicated that major oil production is associated with salt domes. Today, salt-dome production is the backbone of Gulf Coast oil.

To commemorate Spindletop, Beaumont started 47 separate events this week. The program included parades, barbecues, addresses, musical dramatizations, national radio broadcasts, and ceremonies. High spot of the week was a dinner at which three of the nation's top-ranking industrialists spoke. The impact of petroleum on the entire country since the Lucas gusher roared in 50 years ago was discussed by B. Brewster Jennings, president, Socony-Vacuum Oil Co., Inc.; Charles E. Wilson, president, General Motors Corp.; and Walter S. Carpenter, Jr., chairman, board of directors, E. I. du Pont de Nemours & Co., Inc.

Special train.—On Tuesday, the Houston Geological Society sponsored a special train to Beaumont and staged is own celebration with top-notch speakers present. With John Suman, vice president of Standard Oil Co. (N.J.), as master of ceremonies, the society heard Wallace Pratt, former chief geologist for Humble Oil & Refining Co., and later vice president of Jersey Standard; Alexander Deussen, famous geologist, and Ira Cram, vice president of Continental Oil Co.

Top network radio programs which called attention to Spindletop included Gulf Oil Corp.'s "We the People," Du Pont's "Cavalcade of America" which presented a Spindletop drama, and U. S. Steel's Theater Guild program which featured a commentary on Spindletop by its well-known announcer, George Hicks.

National asset.—In proclaiming "Spindletop Fiftieth Anniversary Day" on Wednesday, Gov. Allan Shivers of Texas described the historic event as "the day that Texas oil became a national asset." He added that "the 100,000-bbl. Lucas well ushered in a great industrial age destined to bring new conveniences and a new way of life to these United States."

Oldtimers were honored Wednesday with ceremonies at the 58-ft. granite monument which marks the site of the Lucas well on the outskirts of Beaumont. E. L. DeGolyer, internationally known geologist of Dallas, was the principal speaker at the monument ceremonies.

In downtown Beaumont, a replica of the Lucas rig and a modern 10,000-ft. rig were erected in Sunset Park. The Lucas rig with its 64-ft. derrick and small steam engine, required 76 days to dig the 1,160 ft. Spindletop well. Drillers estimate that the modern-day rig sitting beside the replica could reach that depth in 5½ hours.

Began last summer.—Plans for the Spindletop fiftieth anniversary celebration were started last summer when Governor Shivers appointed a commission to handle the affair. This commission is composed of John W. Newton, Magnolia Petroleum Co., Beaumont, chairman; Phil S. Justice, Sun Oil Co., Beaumont, vice chairman; I. F. Betts, American National Bank, Beaumont, treasurer; W. W. Leach, Magnolia Petroleum Co., Beaumont, secretary; Marion E. Brock, Gulf Oil Corp., Houston; F. L. Wallace, The Texas Co., Port Arthur; C. W. Cooper, Pure Oil Co., Nederland; and Dr. A. M. McAfee, Lamar State College of Technology, Port Arthur.

Further recognition will be given the Spindletop discovery by four major oil groups which will meet in Beaumont during the year. Conventions are scheduled for the city by the American Petroleum Institute, Southwestern Division, spring production meeting; Texas Independent Producers and Royalty Owners Association; National Oil Scouts and Landsmens' Association; and Texas Mid-Continent Oil and Gas Association.

Oil Industry Praised

Importance of petroleum to chemical field cited by Du Pont chairman as Spindletop celebration gets under way

Leigh S. McCaslin, Jr.

BEAUMONT.—In 25 years the percentage of organic chemicals derived from petroleum by the giant United States chemical industry has risen from 1 to nearly 50 per cent.

This striking growth was described here this week by Walter S. Carpenter, Jr., chairman of the board of directors of E. I. du Pont de Nemours & Co., Inc. Carpenter spoke at a banquet celebrating the fiftieth anniversary of the discovery of the Spindletop oil field.

Tracing the close connection between the development of the modern chemical and oil industries, he declared that the two "have stimulated some of the great achievements of science."

The Du Pont executive said he is impressed with the "great magnitude" of importance of the contributions of the oil industry to chemical manufacture. He mentioned three factors in regard to these important contributions. First, the available tonnage of petroleum raw materials for the chemical industry seems unlimited. Secondly, Carpenter regards the proximity of this domestic reserve as of "great consequence" in this time of emergency. In the last place, he emphasized that the speed with which these materials can be converted into useful products may be critical.

Synthetic products.—Carpenter cited the creation of synthetic rubber and the development of synthetic toluene

and synthetic glycerin as products resulting from the close relationship between the petroleum and chemical industries. Petroleum derivatives likewise go into new farm chemicals—fungicides, insecticides, and pesticides. He noted further a practical shift to petroleum products for making nylon and that Du Pont's new "Orlon" acrylic fiber will call on the oil industry for raw materials.

The Du Pont executive called attention to the rapid growth of the chemical industry in Texas. In the Gulf Coast area alone, he said, about a billion dollars was invested in petrochemical plants during the war and since then half again as much has been invested or earmarked for projects by private concerns in this same area.

Common field. — A field common to both the chemical and oil industries "is the area of exploration and research," he said. "The objective of the quest is much the same for both of us—to find new or better sources of materials, improved processes and tools with which to work, and eventually new, better, and cheaper products and services for the benefit of mankind.

"To achieve success in this work requires months or years of courage, adventure, and perseverance," he added. "If success crowns our efforts it marks but the beginning of a further state—that of providing the huge plants to exploit our findings and thereby make available these products and service. All of this requires great resources to provide for the research and capital expenditures. These expenditures involve considerable hazard and speculation. They are made in anticipation of future income, often long-deferred and sometimes nonexistent.

"These requirements are among those burdens to be assumed by the large units of industry which alone can afford to bear them in order that new products may be created and, in turn, fanned out for further processing or distribution to the thousands of smaller units, and eventually to the ultimate beneficiary—the consumer. That is part and parcel of our American economy."

'Spirit of Spindletop'

Discovery of field was symbol of freedom of enterprise that has made America great, Jennings tells celebrants

BEAUMONT, Tex.—The basis for today's oil industry and other key industries in the United States was laid down 50 years ago when the Lucas gusher opened Spindletop field, B. Brewster Jennings, president, Socony-Vacuum Oil Co., Inc., told industry leaders gathered here this week for the observance of the fiftieth anniversary of the field's discovery.

The discovery was a dramatic symbol of the freedom of enterprise that has made America great, he said. "Spindletop was the beginning of the modern oil industry. It proved that oil could be found in vast quantities in areas far distant from the eastern United States. Spindletop sparked an all but incredible expansion in the search for oil in this country. It was a triumph of freedom of enterprise.

"This discovery," Jennings continued, "could have been made when it was only under a system which makes it possible for free men to bet their money against the powers that be and the authorities that are."

The Socony-Vacuum president was one of a number of industry leaders who attended the celebration ceremonies here on January 10. His speech, entitled "The Spirit of Spindletop," coupled his tribute with a plea to safeguard the freedom of enterprise and for "avoidance of laws which would prevent the proper and essential use of freedom."

Works pretty well.—"In the 50 years since Spindletop came in," he said, "we have had to transform the oil business from one which was primarily a maker and seller of kerosine for lighting to one able to meet an almost overwhelming demand for power fuels, chiefly gasoline, of course. Within the last 10 years particularly, we have had to make extensive changes in our refining to meet a rapid and rather sudden increase in demand for home heating oils and diesel fuels. The fact that these complex changes have been worked out smoothly, efficiently, and economically argues that freedom of enterprise has worked pretty well. I doubt that these changes could have been effected if a central agency of Government had been solely responsible, had been required to foresee the changing demands, and then direct and order the multiplicity of actions necessary to meet the new situation.

"Because freedom of enterprise is so vital to the future of our industry, we must be ever-watchful to detect in the sometimes plausible arguments of proponents of control the proposals that are totally incompatible with our essential freedom."

Second to none.—He pointed to the oil industry as being second to none in doing a steadily "better job" for the public, and cited the fact that his industry is building 50 per cent more useful power into each gallon of gasoline today than it did 25 years ago. In spite of this, he added, the price of gasoline, exclusive of taxes, is no higher today than in 1925, although the dollar's value has dropped.

Jennings showed how the oil industry's competitive struggle to please its customers in the past 5 years has built its strength to help protect them now. The industry during this span has drilled 175,000 wells, increasing its crude-oil reserves by 6 billion barrels.

"It has raised its potential maximum rate of efficiency production by 1,600,000 bbl. a day," he said, "and its refining capacity by 1,500,000 bbl. daily. American oil companies abroad have likewise increased capacity in all departments."

He said that if total war with the Communist nations comes, the free nations will have about 90 per cent of the world's oil resources.

"Of all the available sources of energy," Jennings said, "by far the best for war is oil. In fact, oil is the only fuel which modern armies, navies, and air forces can use. Oil gives our forces virtually unlimited mobility, which may prove a determining advantage."

Confidence limitless.—"However harsh the trials of the oncoming years, we in the oil industry face them with limitless confidence in the capacity of the free human spirit to rise above them," Jennings said. "Should the forthcoming year bring full-scale world war despite our efforts and prayers for peace, there is no doubt in my mind of our ultimate triumph. Our greatest peril, it seems to me, is not that we may have to fight, but that we may be forced into such a prolonged state of readiness to fight that we abandon too far and too long that freedom of enterprise—the Spirit of Spindletop—without which we never could have achieved our present superior ability to fight.

"America has many Spindletops, not only in oil but in science and industry—in our colleges and universities. As Americans we are justly proud of them. They are tangible evidences of our country's greatness—the fruits of our strength, but not the primary source of it. For that we turn to the greatest treasure of them all—the Spirit of Spindletop."

Industrial Relations

They have been good in oil industry, Pew says

BEAUMONT.—"We've always had good industrial-relations practices in the oil industry," John G. Pew, vice president of Sun Oil Co., told a large audience of roughnecks and refinery workers during the Spindletop celebration here.

Even in 1901 when Captain Lucas brought in his historic well, there

was evidence of good industrial relations, Pew said. He described the experience of Al Hamill of Tulsa, one of the drillers on the well as proof. Hamill says: "During the night, the Captain located me and said Mrs. Lucas insisted that he take me home with him so I could get a little sleep and have some breakfast." In modern parlance, Mrs. Lucas could well be described as "the Captain's industrial-relations advisor," the Sun executive asserted.

Well adjusted. — "Our industry is famous for the fact that its oil-field workers and refinery workers are a well-adjusted group of men," Pew told his worker audience. "We oil people belong to the greatest fraternity on earth," he added.

Using some current statistics to prove his point of good industrial relations, Pew said that during the first 9 months of 1950, average weekly oil-production wages were 9.5 per cent higher than average miners' wages. During the same period weekly oil-refinery wages averaged 32.4 per cent higher than the average of all manufacturing industries.

In addition to good wages, the Sun vice president said: "I don't believe there is any industry that beats ours with respect to paid vacations, insurance and hospitalization plans, and stock purchase plans."

Operations Change Hands

SNYDER, Tex. — Texas oil operations of Imperial Agency Corp. have been taken over by Imperial Production Corp., Jay T. Cremer, vice president of the latter firm and manager of its Texas office, announced last week.

Purpose of the change was to consolidate Imperial Production's various holdings and to establish a more effective operational organization, Cremer said. The district office here will be maintained, and the main office will continue to be in New York City. Imperial Agency leased a large spread of acreage in Scurry County, Texas, in 1945, and opened its Snyder office in 1946.

Five Texas Wells Sold

HOUSTON.—Sale of five gas-distillate wells in Nada field of Colorado County, Texas, from Ohio Oil Co. to J. A. Gray & Associates of Houston was announced last week. Consideration was not revealed.

The wells are producing from three reservoirs lying at depths of from 6,200 to 6,800 ft. in the Eocene Yegua formation. A block of 3,200 acres is proven on the field spacing of 640 acres per well.

Gray said that Tennessee Gas Transmission Co. takes 6,000 M.c.f. of gas daily from the group of wells. Distillate production, amounting to 120 bbl. per day, is taken by Scurlock Oil Co. of Houston, which operates a gathering system in the field.

The field was discovered in 1944 by Northern Ordnance at 1 Homer Ammann in the G. H. Harfst Survey on an Ohio farmout. Later Ohio purchased the discovery well and drilled for additional gas-distillate wells.

Gray's associates include Drilling, Inc., and George P. Mitchell.

MID-CONTINENT

Drilling Program

New Hugoton Plains firm to drill 40 new gas wells

NEW YORK.—The newly organized Hugoton Plains Gas & Oil Co., which last week purchased natural-gas reserves in the Oklahoma Panhandle and adjoining Kansas counties for approximately $36,000,000, will engage in an active drilling program during the next 6 months, the company reported here.

An additional 30 to 40 gas wells will be drilled during that period, which should increase the production capacity from the present level of 90,000,000 cu. ft. daily to 120,000,000 cu ft. daily.

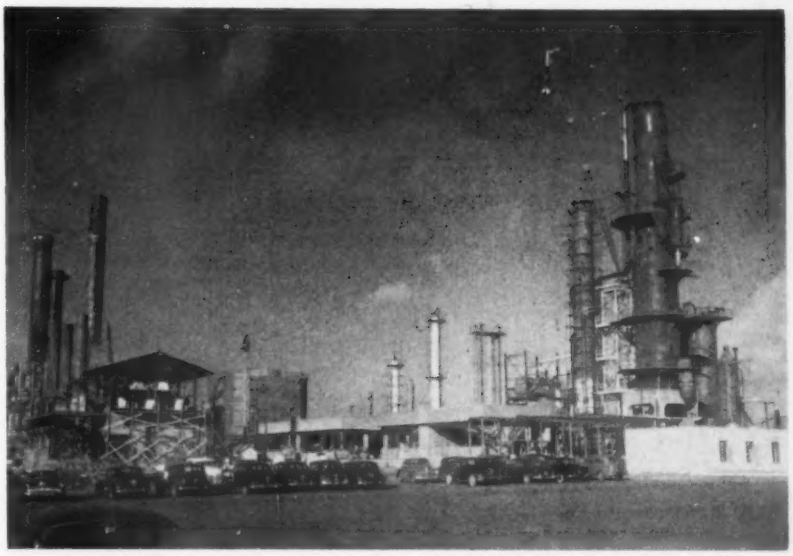
J. S. FLUOR

The purchase, believed to be one of the largest ever made of privately owned natural-gas reserves, was made by a group of western industrial and investment men formed by William R. Staats Co., Los Angeles. Principal stockholders are J. Simon Fluor, the Staats Co., and Fred R. Tuerk. *(The Oil and Gas Journal, January 4, 1950, page 31.)*

After 2 years of negotiations, the properties were purchased by the new Hugoton Plains firm, which placed $20,000,000, 15-year, 4 per cent first-mortgage notes with Mutual Life Insurance Co. of New York, and another insurance institution.

Production being sold.—All gas production of the new firm is being sold to Northern Natural Gas Co., Omaha. Present deliveries are at the rate of 90,000,000 cu. ft. daily.

The new company has leases in proven gas fields totaling approximately 95,000 acres in the Oklahoma Panhandle, and 20,000 adjoining acres in Kansas. Total reserves are estimated at more than 800 billion cubic feet and there are now 154 producing gas wells on the properties,



Refinery Takes On New Look

Shown here is the McMurrey Refining Co. plant at Tyler, Tex., now undergoing a modernization program due to be completed early this year. New installations include a U.O.P. fluid cat cracker rated at 5,000 bbl. per day, gas-recovery facilities for supplying polymerization feed stock, and a polymerization unit of 350 bbl. per day 10-lb. poly gasoline production. In addition, a portion of the existing thermal cracking plant is being converted to a single-coil cracker, and the balance of the plant made over into a vis breaker and vacuum-flash unit. Topped crude will be charged to the flasher at a rate of about 4,000 bbl. per day to yield feed for the cat cracker and a fuel oil as the bottom product. Work is being done by Refinery Engineering Co., of Tulsa.

DONALD ROYCE

FRED TUERK

having an allowable of 90,000,000 cu. ft. daily.

A natural-gasoline-stripping plant, now being built at Hooker, Okla., will be completed about March 1 to produce 100,000 gal. daily of butane, propane, and natural gasoline. The plant, gas wells, and other production facilities represent an investment of $10,000,000.

Officers.—Fluor will serve as president of Hugoton Plains, with Tuerk as chairman of the board and Donald Royce as vice president. G. Hamilton Beasley has been named treasurer, and Dewey F. Gruenhagen is secretary.

Fluor is executive vice president of Fluor Corp., Ltd., Los Angeles. Tuerk is a Midwest industrialist, and Royce is head of William R. Staats Co. Beasley and Gruenhagen are executives of Staats. All officers of Hugoton Plains will retain their present posts in their respective companies.

CANADA

Crude Line Planned

Alberta Natural Gas Co. seeking government permission to build crude line from province to Pacific Northwest

Dahl M. Duff

ALBERTA NATURAL GAS CO. is seeking Canadian Government permission to build a crude-oil pipe line from Alberta to the Pacific Northwest along the preferred southern route of its proposed natural-gas line.

The company's plans became known following the filing of an application with the Dominion Board of Transport Commissioners in Ottawa. A hearing on the crude line has been scheduled by the board for February 14.

The crude line would be 16-in., originating in the vicinity of Edmonton and extending south into the United States at Kingsgate, B. C., and then west across the State of Washington to a terminal at Vancouver, B. C. It would serve existing and projected refineries along the route and in the Vancouver area.

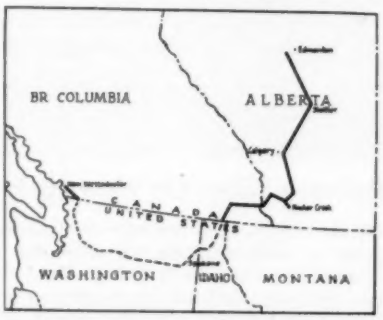
Advantages cited.—A. Faison Dixon, president of Northwest Natural and a member of the engineering firm of Brokaw, Dixon & McKee, said there are a number of advantages to the construction of both gas and crude lines along the same right-of-way as far as possible. Deliveries from the projected crude line, he added, would relieve some of the pressure on California crude production caused by heavy and increasing military and civilian demands.

While all details of the crude line have not been fully decided, plans call for pumping stations at intervals of about 160 miles. Initially, the line would have a capacity to deliver between 60,000 and 80,000 bbl. daily. This could be increased about 50 per cent by additional pumping facilities. Route for the line has already been surveyed in connection with the gasline project, and the field data are available.

Totals 950 miles.—Total length of the crude line would be about 950 miles. It would be available to Redwater and Leduc fields as well as Stettler and Pincher Creek to the south. The line would operate as a common carrier under rates set by the Canadian and United States Government agencies involved.

The possibility of building an outlet for Alberta crude westward to the Pacific Coast has been discussed in the industry for the last several years, but the Northwest Natural project is the first to take definite steps for its authorization.

The products market in the Pacific Northwest area is now reported to be approximately 250,000 bbl. daily. The three existing British Columbia refineries have a crude capacity totaling slightly more than 28,000 bbl. daily, but new refinery construction is under consideration for the area. The Northwest Natural crude line also would be available to supply crude to plants in Calgary and Spokane.



Route of proposed new crude-oil line from Alberta to Vancouver in British Columbia, which would parallel a proposed natural-gas line. Both would be built by Alberta Natural Gas Co.

Northwest Natural's charter from the dominion government allows the construction of the oil line as well as the natural-gas project. Assuming a favorable decision by the Board of Transport Commissioners in Ottawa, the project next will be placed before the Board of Public Utility Commissioners in Alberta.

Companion project.—Dixon said that the crude line would be a companion project to the gas line but that the two would be independently operated and managed.

Northwest Natural is one of three companies which have been attempting to obtain authorization from the Alberta and dominion governments for the construction of a line to supply natural gas to the Pacific Northwest. The other two are Westcoast Transmission Co., Ltd., and Prairie Gas Transmission Co.

First decision in the competition for the permit for the gas line is expected to come in the next few weeks when the Alberta Government gives a decision on the issue of whether the province's gas reserves are sufficient to justify export. It is not known whether this ruling will designate a company and simply authorize gas exports. Hearings in Alberta have been completed, and the evidence presented.

Gas question.—Permission for the crossing of international and provincial boundaries is given by the Board of Transport Commissioners but this agency is waiting for Alberta's decision on the gas question before taking action. A hearing on Westcoast's application, originally set for January 8, has been postponed. A hearing for Prairie is scheduled for February 5, presumably to follow the Alberta government's decision.

The Prairie company is a subsidiary of Pacific Northwest Co. whose backers include Ray Fish, Houston contractor. Westcoast has based its case mainly on the fact that the route for its proposed line is in Canadian territory, extending through British Columbia instead of dropping south into the United States. Prairie and Northwest Natural both favor the southern route, and Northwest Natural feels that this would be the only route at all feasible for the crude line. At one point, Northwest Natural proposes to use an abandoned railroad tunnel in the Cascade Mountains in eastern Washington avoiding about 1,000 ft. elevation over difficult terrain.

Know the proper way to store hydrocarbons like butane and natural gasoline?

The proper way is extremely simple. You should store light hydrocarbons like butane, butane-propane mixtures and natural gasoline in pressure tanks . . . such as the Hortonspheres shown below.

Why pressure is proper

Cone roof tanks operating at atmospheric pressure won't do as they let these highly volatile petroleum products boil.

When a light hydrocarbon like butane is stored in a Hortonsphere, evaporation takes place until the pressure in the tank is equal to the vapor pressure of the butane. None of the contents of a Hortonsphere escape as long as this internal pressure does not exceed the relief valve setting.

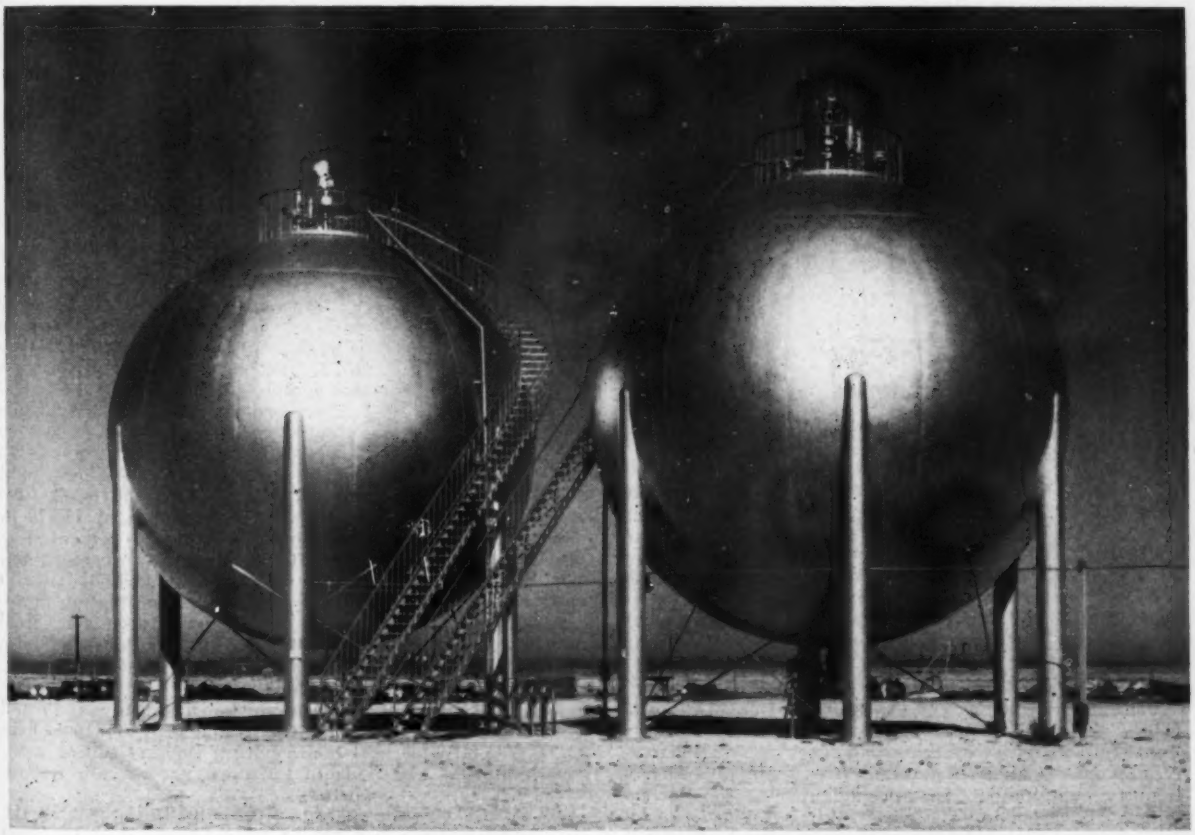
Why sphere is better

The Hortonsphere has several advantages over a battery of cylindrical pressure tanks of the same total capacity. It takes less steel to build. It requires less ground space and needs only *one* set of piping connections and fittings for each Hortonsphere. Since it has less surface area per bbl. of capacity, it is more economical to paint and maintain.

Literature available

Bulletin F will tell you more about the Hortonsphere—the proper tank for light hydrocarbons. Write our nearest offices for a copy.

Below: Two 3,000-bbl. Hortonspheres built for the Atlantic Refining Company in the Block 31 Field, Crane County, Texas. They are designed for a working pressure of 45 lbs. per sq. in. and are used to store gasoline.



CHICAGO BRIDGE & IRON COMPANY

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PENNSYLVANIA

Atlanta, 3.....2154 Healey Bldg.
Birmingham, 1.....1536 North 50th St.
Boston, 10.....1025—201 Devonshire St.
Chicago, 4.....2128 McCormick Bldg.
Cleveland, 15.....2204 Guildhall Bldg.
Detroit, 26.....1514 Lafayette Bldg.
Havana.....402 Abreu Bldg.
Houston, 2.....2119 National Standard Bldg.
Los Angeles, 17.....1523 General Petroleum Bldg.
New York, 6.....3347—165 Broadway Bldg.
Philadelphia, 3.....1615—1700 Walnut Street Bldg.
Salt Lake City, 4.....525 West 17th South St.
San Francisco, 4.....1554—200 Bush St.
Seattle, 1.....1325 Henry Bldg.
Tulsa, 3.....1606 Hunt Bldg.

REPRESENTATIVES AND LICENSEES

Horton Steel Works, Limited, Fort Erie, Ontario, Canada
Ateliers et Chantiers de la Seine Maritime, Paris, France
Constructions Metalliques de Provence, Arles-sur-Rhone, France
Chicago Bridge & Iron Company, Ltd., Apartado 1348, Caracas, Venezuela
Comprimo N.V., Amsterdam—O, Netherlands
Compagnia Tecnica Industrie Petroli, Rome, Italy
Whessoe, Limited, Darlington, England
Motherwell Bridge & Engineering Company, Limited, Motherwell, Scotland
Sociedade Chibridge de Construcoes Ltda., Rio de Janeiro, Brazil

Plant Expansion

Imperial to modernize its Sarnia, Ont., refinery

IMPERIAL OIL, LTD., has announced plans for a major expansion and modernization program for its Sarnia, Ont., refinery under which capacity of the plant will be increased from the present 55,500 bbl. daily to 71,000 bbl. daily.

Bids are being asked for the construction of a 46,500-bbl. daily atmospheric and vacuum distillation unit, a 23,250-bbl. daily fluid catalytic cracking unit, and a light-ends recovery plant. The new units, along with increased boiler and water-pumping capacity, will replace and augment existing facilities, according to Dr. J. L. Huggett, general superintendent of the refinery.

Largest in Canada.—The atmospheric and vacuum unit will be the largest single refining unit in Canada. The catalytic cracking unit will be of a new simplified design and will be the largest catalytic cracking equipment in Canada.

Completion of the program, probably by the end of next year, will give the Sarnia refinery the most up-to-date equipment for processing Alberta crude. Site preparation for the new units is expected to get under way in the near future, with construction scheduled to begin in the late summer or early fall.

Refinery Contract

Canadian Oil Refineries lets work for new units

CONTRACT for the first processing units for Canadian Oil Refineries' new $18,000,000 refinery at Froomfield, Ont., have been awarded to Canadian Kellogg, Ltd., Toronto. W. Harold Rea, president of Canadian Oil Companies, Ltd., and the affiliated Canadian Oil Refineries, Ltd., has announced that Kellogg will design and erect four of the main process units at the complete new plant.

The contract includes an ortho-flow type fluid catalytic cracking unit, a light-ends-recovery system, a catalytic polymerization plant, and fractionating equipment for producing butane and propane. The cat cracker will produce high-octane components for blending to both motor fuel and aviation gasoline. Certain light hydrocarbons from the gas-recovery system will be provided to the adjacent government-owned Polymer Corp. plant for synthetic-rubber manufacture.

Other units.—Tenders are being called by Stone & Webster, Canada, project managers for other process units for the new 20,000-bbl. per day refinery. These will include atmospheric and vacuum crude distillation facilities, a catalytic reforming unit, and various treating facilities. Grading of a portion of the company's 400-acre tract on the St. Clair River near Sarnia is already under way. Kellogg will commence construction in early spring.

The new Froomfield refinery will process Alberta crude transported via the Interprovincial pipe line and Great Lakes tankers. The refinery is scheduled for initial operation by the spring of 1952. The company will maintain storage capacity for 1,700,000 bbl. of crude and products at Froomfield and at nearby Petrolia, where its 43-year old, 4,000-bbl. refinery is located.

GULF COAST

Tidelands Fight

Common course sought by Texans to acquire areas

AUSTIN.—Plans to develop a united front for carrying on a battle for state ownership of the tidelands were made at a meeting of the executive committee of the Texas Property Defense Association here last week.

The executive committee authorized its president, Durwood Manford, to invite the representatives of 10 statewide organizations who have adopted state-ownership resolutions to attend a meeting to be held in Austin January 20.

The purpose of the meeting will be to agree on a single plan of action and to give consideration to interim legislation which would permit continued operation under existing leases of tidelands' oil property during the present national emergency and until final passage by Congress of permanent state-ownership legislation.

After 10 years in the legislature Manford steps down this week as speaker of the Texas House of Representatives but he plans to help Texans fight to retain public lands "under that theory of 'paramount rights' and 'equal footing' which the Supreme Court followed the federal Government can take over our school lands in West Texas, our rivers, streams, and inland bays," says Manford.

Same goal.—Guy C. Jackson, of Anahuac, chairman of the executive committee, said that "we are all working for the same goal—state ownership of the tidelands, but we haven't coordinated our efforts. We want to build a tidelands team which will carry out a single definite course of action with the proper timing."

Gen. W. F. Heavey, of Houston, chairman of the association's coastal committee, emphasized that the tidelands battle involves far more than offshore oil properties.

"Control of every port along the Texas coast is threatened by the Supreme Court's adverse decision," he said. "Unless we are vigilant we are in danger of having a new theory of federal ownership thrust on us."

Close check kept.—Meanwhile, Texas congressional leaders are keeping a close check on every significant development affecting the status of tideland ownership. Rep. Ed Gossett of Wichita Falls and Sen. Tom Connally have given notice they will push a bill in 1951 giving the states outright ownership of the submerged area.

Compromise legislation dividing oil proceeds from the tidelands and the outlying Continental Shelf between the states and the United States might be offered early in the year.

In addition, enabling legislation will be necessary to authorize the states or the federal Government to permit new drilling. The recent Supreme Court decree and the following Interior Department order only directed leaseholders to continue production and the drilling of wells already under way at the time the rulings were issued.

Offshore Discovery

Oil found on Ship Shoals dome off Louisiana coast

Jospeh A. Kornfeld

NEW ORLEANS.—First oil production for the Ship Shoals Block 72 salt dome area lying 17 miles south of St. Martin Lite in Terrebonne Parish, Louisiana, in the Gulf of Mexico, was completed last week.

The discovery oil well is Magnolia Petroleum Co., operator, B-1 State Lease 768 in Block 87. Continental Oil Co. and Newmont Oil Co. hold a joint interest. Originally, the well was drilled to a total depth of 11,978 ft. and 7-in. pipe set and cemented at 11,850 ft. Bottom squeeze perforations were made from 11,066-68 ft. with eight ½-in. bullets. Completion perforations were shot in two sets, from 11,036-42 ft. with 24 bullets, and from 11,048-54 ft. with 24 bullets.

During the last 4 hours of the 24-hour flow-test series, the well flowed 85 bbl., or at the rate of 510 bbl. in 24 hours with a flowing tubing pressure of 1,970 psi., gas-oil ratio not reported.

Crude-oil gravity tested 37.8° A.P.I. at 68° F. Tubing pressure stabilized at 2,065 psi. The well was shut in on December 27 for lack of oil storage.

Casing program followed was: 20-in at 491 ft.; 13⅜-in. at 2,995 ft.; 9⅝-in. at 8,958 ft., and 7-in. at 11,850 ft.

Located on the south flank of a deep-seated salt dome discovered by drilling during the summer of 1948, the well lies from 4,000 to 5,000 ft. south and east of two shallow gas wells completed by Magnolia Petroleum Co.

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MIDDLE EAST

Aramco-Arab Agreement

Accord reached between company and Arabia allows government up to half of company's net operating revenue

Dahl M. Duff

THE new agreement which has been reached between Arabian American Oil Co. and the Saudi Arabian Government allows the government a total participation in the operation of up to one-half the company's net operating revenue.

The government's share is inclusive of the fixed per-ton royalty which Aramco is required to pay regardless of earnings. At present and anticipated levels of production, the agreement substantially increases the government's income, but from the company's standpoint, it sets a ceiling on all payments to the government—royalty, miscellaneous levies, and income taxes—of one-half the net operating revenue.

Of equal importance is the fact that the new arrangement places all monetary transactions between Aramco and the Saudi Arabian Government on the basis of official, internationally accepted exchange rates. This eliminates the premium gold-sovereign rate at which the company has been paying royalty.

These are the main outlines of the agreement as described last week by responsible industry sources. The terms generally follow much the same pattern as that in effect for several years in Venezuela where the government adjusts its income tax to obtain a total income, including royalty, that is equal to company profits.

Signed December 30.—The agreement was signed December 30 in Jidda, the Saudi Arabian financial and diplomatic capital, between King Ibn Saud's ministers and representatives of the company. It is a revision of the original concession contract which dates from 1933 and runs for 66 years. There have been several other modifications in the contract since 1938.

The new agreement dealing with the government's participation in the Aramco operation is of broad significance internationally since the company's reserves are the most important held by Americans in the Eastern Hemisphere. It is expected to have repercussions elsewhere in the Middle East. Governments in the Persian Gulf area without exception have been demanding greater income from the oil operations, and the Aramco settlement may result in further concessions by other companies.

Terms set forth.—Under terms of the agreement as reported in the industry, the company's gross income will be subject to four classes of deductions: (1) operating expenses, (2) exploration and development expenses, (3) depreciation, and (4) foreign-government taxes, including United States income taxes actually paid or payable.

Half the remaining net operating revenue becomes the maximum limit of payments of all kinds to the Saudi Arabian Government, including royalty and the various miscellaneous levies now collected such as import duties, visa fees, and port charges. The Saudi Arabian income tax, the principle of which is accepted, is adjusted to take the difference between the total of royalty and miscellaneous levies and the maximum of half the net operating revenue.

Effect.—The effect of the agreement with the company is to set a ceiling on total government payments, at the same time assuring the government of a minimum in the fixed royalty and miscellaneous taxes now paid. These would accrue to the government even if the company operated at a loss.

The Aramco concession contract provided for royalty at four gold shillings per ton, but under a special agreement negotiated about 2 years ago the company has been paying on the basis of $12 as the value of the gold sovereign (20 gold shillings per gold sovereign) instead of on the $8.24 official rate. Per barrel, this is about 34 cents as against 22 cents. In addition, the riyals which the company buys from the government for paying its Saudi Arab employes and other purposes have been obtained from the government at a premium.

Under the new agreement, all exchange values are placed on accepted international rates. The royalty thus will be lowered, but this will be more than offset by the sliding scale income tax up to the fixed limit of one-half the net operating revenue. Riyals are traded only within Saudi Arabia, but the company will henceforth buy this currency at the prevailing rate existing in the country.

Tax currency.—Aramco is given the advantage of paying the taxes imposed in any currency which it receives and in the same proportion. Under an earlier agreement with Saudi Arabia and with permission of the British exchange authorities, the company has been paying about 25 per cent of its royalties to Saudi Arabia in sterling, and it is expected that this percentage may be stepped up.

Practically all the foreign-government taxes paid by Aramco outside Saudi Arabia are those which, as an American corporation, it pays to the United States Government. The company is one of the few operating wholly outside the United States but incorporated in and paying taxes to this country.

The new agreement with the Saudi Arabian Government will mean some reduction in the company's United States taxes since the foreign taxes are deductible. Aramco is not subject to the new excess-profits tax since this, like the old wartime law, exempts corporations with 95 per cent of their income outside the country.

Under pressure.—For the last 2 years it has been known that Aramco was under considerable pressure from the Saudi Arabian Government regarding the government's income. The offer of Anglo-Iranian Oil Co., Ltd., for higher royalty in Iran and the increased royalty negotiated in Iraq led to renewed insistence from the Saudi Arabs for a greater share in the Aramco operation.

Furthermore, all four of Aramco's owning companies—Standard Oil Co. of California, The Texas Co., Standard Oil Co. (N. J.) and Socony-Vacuum Oil Co., Inc., have other subsidiaries in Venezuela which have accepted the plan of government participation equal to their profits.

While recognizing the government's case for higher revenue, Aramco has been engaged until only recently in a postwar program of heavy capital expenditures under which production has been increased to its present rate of more than 600,000 bbl. daily. Much of this work has been carried out, and with the Trans-Arabian pipeline system in operation, the prospects are for further increases in output.

Tax decreed.—Last October the Saudi Arabian Government decreed an income tax, the first in the country. This was drawn up with the assistance of an American adviser from the United States and provided for a 5 per cent tax on all individual incomes in excess of about $5,000 and a 20 per cent levy on corporation profits.

Aramco, the largest foreign enterprise in the country and the source of nearly all the Saudi Arabian foreign income, made a vigorous protest against this 20 per cent corporate tax. While conceding the taxing power

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of a sovereign government, the company cited Clause 21 of its original contract which specified that the company was exempt from taxes within the country. Along with the tax, the government made a number of demands on the company, all of which were completely unacceptable.

The negotiations which followed resulted in a new decree on December 27 supplementing the provision of the 20 per cent tax, and then on December 30, in the over-all modification of the concession agreement of the company. It was stated that the agreement thus reached provided a comprehensive settlement of all the difficult demands raised by the government and that it gives the company a new stabilized financial relationship with the government which will allow more certain planning for the future.

Additional income.—The amount of additional income which Saudi Arabia will receive under the new agreement is not known exactly. As a privately owned company, Aramco's accounts are not published, and furthermore, it was pointed out that earnings fluctuate and that the total to the government can be determined only after all other payments have been computed.

Reports from Cairo said that the agreement would increase the government's revenue from Aramco by about $30,000,000, or from between $60,000,000 and $64,000,000 at present to between $90,000,000 and $94,000,000. These estimates are for 1950 which is covered retroactively by the agreement. Considering the increased production, total payments in 1951 are likely to exceed $100,000,000.

A responsible official familiar with the agreement said it was hardly inaccurate to call it either a profit-sharing plan or a partnership with the government. In no sense is the government brought into any phase of actual operation of the company and continued capital investments are the sole responsibility of the company. The agreement does not affect Trans-Arabian Pipe Line Co. nor does it go beyond Aramco's own producing and refining operations.

Individual tax.—The 5 per cent tax levied on individuals and affecting many of the company's employes stationed in Saudi Arabia is left unaffected by the agreement.

The effect of the agreement elsewhere in the Middle East remains to be seen. The present royalty paid in Kuwait of about 14 cents a barrel will in all probability be increased. The Iraq Government negotiated a 50 per cent increase in royalty earlier this year but some issues are still unsettled, including the question of the free vs. the official gold rate.

Iran's offer.—Iran's offer of a 50 per cent increase in royalty was rejected only recently in the Iranian Parliament, and the Aramco settlement is bound to have an effect in the new negotiations which are to take place between Anglo-Iranian and the government. The present Anglo-Iranian contract calls for payment to the government of 20 per cent of what the company distributes to its shareholders above a certain fixed sum. Anglo-Iranian, however, is in a somewhat different position from Aramco. For one thing, Iran is in a difficult political situation. Also, Anglo-Iranian is an integrated organization operating throughout the Eastern Hemisphere and not confined to its producing and refining operations in Iran alone.

Ramandag Field Extended

About a mile has been added to the proved area of Ramandag field in southeastern Turkey as a result of a successful stepout.

The extension was made in Well No. 23. Ramandag, presently the only producing field in Turkey, was discovered in 1948 and produces 20°-gravity crude from Upper Cretaceous limestone. The field's potential, before the recent extension, was estimated at about 3,000 bbl. daily, but production is considerably below this due to lack of outlets.

Index Ready Soon

The complete editorial index of The Oil and Gas Journal for 1950 is now in preparation and will soon be ready. The complete index, enlarged and improved and with more cross-references, bound separately, will be sent without charge to all subscribers requesting a copy. Address requests to Circulation Department, P.O. Box 1260, Tulsa.

LATIN AMERICA

Mexican Oil Equipment

Government oil agency taking steps to ease impact of possible shortages resulting from U. S. rearmament

Dahl M. Duff

PETROLEOS MEXICANOS, Mexican Government oil agency, is taking steps to ease the impact of possible shortages of equipment resulting from the rearmament program in the United States.

Pemex has been advised by American company representatives in Mexico City to order all machinery and equipment needed as rapidly as possible in order to avoid delays in delivery. Even though development of oil in certain foreign areas, including Mexico, may receive priority standing in the defense program, delays and difficulties are expected to result inevitably from export controls, steel allocations, and shortages in the United States.

The same prospect is a source of concern to oil officials elsewhere in Latin America. Outside of small quantities of material from Britain and a few other European countries, the United States furnishes nearly all the important equipment items throughout the Western Hemisphere. In Venezuela, the defense emergency finds most companies with more normal inventories after 2 years of working off excess equipment stocks that were piled up shortly after the war.

Steel increase.—Plans are being drawn up in Mexico to increase domestic steel production for the manufacture of line pipe and some other oil-industry items. These would be the more easily made pieces of equipment of which Pemex would be the sole consumer.

Both existing steel plants in Mexico, Altos Hornos at Monclovia, Coahuila State, and Fundidora de Fierro y Acero, S. A., are scheduled to expand facilities. In Mexico City, it was reported that government sources not connected with Pemex are expected to ask for permission to use part of the $155,000,000 United States credit, granted early this year, to increase Mexican steel capacity. Should government capital be granted to build a new steel mill, private funds are already available in Mexico to construct a roller mill for line pipe.

Present orders of Pemex for material from the United States are not expected to be interfered with. Even in case of total emergency, officials in Mexico feel that such orders as the $600,000 Cardwell rig purchase and the 23,500 tons of 16-in. pipe from Kaiser Steel Co.'s West Coast mill would not be halted.

Line pipe.—The 16-in. pipe will be used for a gas line between Monterrey and Torreon. Total length of the pipe ordered is 1,115,000 ft. Initial delivery of the $3,600,000 order will begin in August of this year with payment to be made 30 days after delivery of each shipment. It was pointed out that gas delivered in the line

will release fuel oil and crude for the war effort.

Reports from sources in Monterrey said that Tubos de Aceros de Monterrey, a local rolling mill, has been authorized by Pemex to manufacture as much 16-in. as possible between January 1 and the initial delivery date of the Kaiser order. The total made will be discounted from the Kaiser order and switched to the same amount of tonnage in 20-in. line pipe.

Crude prices.—Another effort of the defense program in the United States is in the stabilization of crude prices in the world market. The freeze in United States crude prices as of December 1 applies to foreign crude prices which are generally based on United States quotations. Before the hold-the-line price action in the United States, an increase in the American, and consequently the foreign price, had been anticipated. It is felt that Mexican crude would bring at least a 50-cent premium because of the large defense demand.

Oil Deal Pending

France, Spain negotiating with Mexico for crude oil

CIE. FRANCAISE DES PETROLES, leading French oil company, and Spanish Government interests have been negotiating with Petroleos Mexicanos for possible crude-oil sources in Mexico.

Discussions between C.P.F. and Pemex have been held intermittently for more than a year. It is understood the French organization, 35 per cent owned by the French Government, is seeking a percentage-of-production drilling contract such as have been signed by several United States operators.

One of the major problems has been the French demand to be permitted to ship out their share of crude produced. Mexico, with its growing domestic demand, prefers to pay foreign contractors their percentage in cash.

In Mexico City, Sen. Antonio J. Bermudez, Pemex director-general, said that no agreement has been reached to date with the French. He added that "if they wish to sign a contract to work in Mexico, they'll have to accept Pemex's terms."

Other reports.—Other reports from Mexico said that the Spanish oil monopoly had been in negotiations with Pemex. Antonio Mora, manager of the Spanish organization, was recently in the Mexican capital, but it was not known if any agreement was reached.

The interest of the European companies in Mexico grows out of their desire to supplement Middle East crude sources. C.P.F., whose president, V. De Metz, was reported recently in Mexico, recently terminated its oil-purchase contract with Pantepec Oil Co. which operates in Eastern Venezuela. It has been reported within the industry for some time that Petrofina, the important Belgian company, has bought a share of the interest of E. W. Pauley in the undertaking of Mexican American Independent Oil Co.

Isthmus moves in.—Newest foreign contract driller in Mexico is the Isthmus Oil Co., Amarillo, Tex., which was recently moving in equipment for its first well. Jay Taylor, president, said the company was more interested in reworking old fields than in finding new ones and added that the company's experience was along this line. R. E. O'Donnell, vice president of Isthmus, will be general manager for the company in Mexico, and L. A. Tibbetts, temporary drilling superintendent.

Recent drilling reports from Mexico show Pauley's 1 Reynosa, in Tamaulipas, drilling ahead at 5,100 ft. Cima's 9 Tortuguero was spudded December 9, and the rig now being used to rework No. 1 will be moved to a location for No. 10. Sharmex Tenexco 1, near Golden Lane, Tampico, is drilling ahead at 4,448 ft. Pemex' El Plan 199, completed several months ago at 5,800 ft., is now producing 2,070 bbl. daily.

Ecuadorean Sale

Manabi Exploration buys Ecuador Oilfields, Ltd.

MANABI EXPLORATION CO., INC., has bought the small integrated oil operation which has been carried on for a number of years in Ecuador by Ecuador Oilfields, Ltd.

Ecuador Oilfields is a subsidiary of British Controlled Oilfields, Ltd., which operates in its own name in Venezuela and has interests in Trinidad. Manabi Exploration Co. *(The Oil and Gas Journal, February 2, 1950, page 34)* is owned by a group of independents from Houston, Dallas, Tulsa, and New York. It has been carrying out geological and geophysical work for the last 2 years in a large area in coastal Ecuador which it has under lease and permits.

In a dollar sale, Manabi acquired all the assets of the Ecuadorean company. The transaction became effective January 1. With a few exceptions, the British personnel of the company are being replaced with employes from the United States.

Production.—Ecuador Oilfields produces approximately 1,500 bbl. daily of the 7,200 bbl. daily total output of Ecuador, all from the coastal region in the Province of Guayas. The company has rights over five concessions in the coastal region totaling about 52,000 acres. Besides the producing properties, the sale to Manabi included port facilities, an 11-mile, 4-in. pipe line, and a skimming plant located at Cautivo with a capacity of about 600 bbl. daily which produces for the local market.

The sale to Manabi provides that the company will finish two exploratory operations now being carried out. One is a wildcat and another, an extension well. Manabi, which is headed by Cecil Hagen, Houston operator, as president, now has men working with Ecuador Oilfields familiarizing themselves with the properties.

Pancoastal.—Along with the disclosure of this transaction, it was announced that Pancoastal Oil Co. is increasing its interest in Manabi as well as in Pan Western Oils, Ltd., and Albercan Oil Corp. The latter two companies operate in Canada. In the case of Manabi, Pancoastal is taking its proportional share of a capital-stock increase and also what other stock may be available. It now holds about 35 per cent interest in Manabi.

Albercan, in which Pancoastal has about 70 per cent interest, has more than 2,000,000 acres of permits and leases in Alberta and Saskatchewan and a large interest in about 1,350,000 acres in British Columbia. PAF Western Oils, 30 per cent of which is now held by Pancoastal, has reservations, farmouts, and leases on about 180,000 acres in Alberta and about 750,000 acres of permits in Saskatchewan.

Drilling Platform Planned

Cuban Gulf Oil Co. plans to begin construction in the near future of a drilling platform for its second wildcat test off Cuba's northern coast.

A Cuban Gulf announcement said the second well would be spudded in in May or June. The location is also in the Bay of Cardenas about 50 miles east of the first test. Some heavy oil not considered commercial was found in the first offshore well which went to 5,045 ft. before it was abandoned about a year ago.

Chile Lets Plant Contract

The Chilean Government has engaged Hudson Engineering Corp., Houston, to construct the country's first oil and gas processing plant, which will handle 30,000,000 cu. ft. of gas daily, and 6,000 bbl. of crude.

The $3,000,000 plant will be erected south of the Straits of Magellan on the island of Tierra del Fuego, 80 miles south of Punta Arenas, the world's southernmost city.

The facilities will process gas and crude from the Spring Hill formation of Cerro Manantiles field, the country's first production, which was discovered in 1945. Subsequent development of this field has resulted in the completion of about 40 wells.

(Continued on page 134)

PERSONALS

Shell Veteran

Bond has been with company for 25 years

REID W. BOND, regional director of production for Shell Oil Co., Houston, has completed his twenty-fifth year of service with the firm's production staff.

Born in Chicago and educated in Pittsburgh, Bond, following his release from the Marines at the end of World War I, worked as a tool dresser in the Pennsylvania oil fields. Later he returned to school and received a B.S. degree in petroleum engineering from University of Pittsburgh in 1923.

During the boom at Tonkawa, Okla., in 1925, he joined Comar Oil Co., a Roxana subsidiary, as a production engineer. Subsequently, he held positions with Shell as production engineer in charge of gas-lift operations in the Tulsa office; assistant general superintendent of production at Tulsa, and division manager of the Panhandle and Kansas divisions. In 1937 he returned to Tulsa as Mid-Continent area production manager.

Bond's Shell career has included special assignments which took him to The Hague and the Romanian oil fields in 1934, and to Venezuela in 1940.

As a member of General MacArthur's staff in World War II, Bond helped with the planning and coordinating of amphibious landings at Leyte and Lingayen Gulf, and he later participated in the landings, holding a Sixth Army command. For this service he was awarded the Legion of Merit and Bronze Star with Oak Leaf Cluster. He left the Army as a colonel at the end of 1945, and early in 1946 went to Houston to assume his present position.

A. L. Kleberg, of Kingsville, Tex., has been elected to the board of directors of Houston Natural Gas Corp., to fill the vacancy created by the death of Frederick J. Singley of Baltimore.

N. H. Wallace, Standard Oil Co. of California, has been transferred from the head office in San Francisco to Calgary, Alta., Canada, as assistant treasurer. He has served 15 years with the firm and is returning to Calgary after an absence of 6 years. **J. F. Ross** has been transferred from Calgary to Edmonton, Alta., Canada, as assistant field superintendent in charge of the firm's operations in Acheson field. **R. C. Richardson** and **S. L. Armstrong** have been transferred from Princess, Alta, Canada, to Edmonton, Richardson as company drilling engineer, and Armstrong as field assistant in charge of construction and production operations in the field.

N. J. Wills has been appointed construction superintendent for British American Oil Co.'s recently announced expansion program at the Moose Jaw, Sask., Canada, refinery. He has been construction superintendent at the firm's new Edmonton, Alta., refinery since last March.

Dr. G. M. Furnival has been elected a director of Standard Oil Co. of California. He has been with the firm for many years, and has held positions of district geologist, production superintendent, and manager of land and leases.

R. K. Waddell, geologist, has been named assistant manager of Sunray Oil Corp.'s new district office at Tulsa. He formerly taught at the geology department at University of Texas while working on his Ph.D.

Dr. Thomas S. Lovering, of the U. S. Geological Survey, Department of the Interior, has been named acting president of the Geological Society of America, following the recent death of Dr. Chester Stock. Dr. Lovering received his Ph.D. degree from University of Minnesota in 1924, and joined U.S.G.S. in 1925. He will act as president until the society council meeting in April, at which time a president will be chosen to serve the remainder of the year.

Floyd A. Nelson, regional geologist for Shell Oil Co., has been appointed to supervise activities of the company's regional exploration staff. The position was formerly held by **Dr. Roy R. Morse,** who retired after 26 years of service. A graduate of University of Wisconsin, Nelson joined Shell in 1929 as an assistant geologist in the St. Louis office, was transferred to Houston in 1940 as geologist for the firm's former Texas-Gulf area, and when Shell organized a regional staff for the East-of-the-Rockies territory in 1945, he became regional geologist.

Martin Toscan, formerly chief of the gas-production division of WPB, has been appointed to a five-man board which will administer the new law requiring the licensing of all practicing engineers in the District of Columbia.

Jared Ingersoll, Philadelphia industrialist, has been elected to the board of directors of Atlantic Refining Co.

Fred E. Simmons, Jr., formerly head of the petroleum-engineering department of Louisiana Land & Exploration Co., New Orleans, has opened a consulting office there for problems in petroleum engineering and geology, specializing in subsurface geology, property appraisal, and property management. He had been with L. L. & E. since his graduation from University of Texas in 1937 handling reserve evaluations, reservoir engineering, subsurface geology, and natural-gas engineering problems.

J. B. Headley, Jr., geologist of Atlantic Refining Co., Casper, Wyo., is now stationed at the general office in Dallas.

Chester C. Clark, Shreveport, La., district geologist for Union Producing Co. for the past 20 years, has retired and will enter consulting work at Shreveport.

R. S. Aberg, junior exploitation engineer for Shell Oil Co. at Houston, has been transferred to the exploitation engineering division at Odessa, Tex. Other changes include: **A. E. Campbell,** junior exploitation engineer, from Tulsa to Midland, Tex.; **J. P. Cogan,** junior exploitation engineer, from Midland to Tulsa; **J. F. Collins** junior mechanical engineer, from Tulsa to Midland; **D. M. Fink,** junior exploitation engineer, to Tulsa; **M. S. French,** junior exploitation engineer, from New Orleans to Midland; **H. E. Gray,** junior mechanical engineer, from Midland to Houston; **R. W. Miller, Jr.,** junior exploitation engineer, from Houston to Odessa as exploitation engineer; **G. W. Olson,** junior mechanical engineer, from Mid-

PERSONALS

land to Tulsa; **D. E. Perriman,** junior exploitation engineer, from Houston to Hobbs, N. M., as exploitation engineer; **R. V. Smith,** seismologist, from Midland to Houston; and **C. E. Traugh,** junior exploitation engineer, from Houston to Midland.

Dr. Charles R. Nelson, head of the process-engineering department of Shell Development Co., Emeryville, Calif., has been elected the first director of the American Institute of Chemical Engineers from west of the Rockies.

Robert J. Boren, petroleum engineer, has joined Honolulu Oil Corp.'s Mid-Continent division at Sundown, Tex. Others who have joined the firm and will be headquartered at the Midland, Tex., office include: **Tom Carter,** geologist; **Doring Little,** geological engineer; and **B. F. Owings,** geophysicist.

Robert Edwards, petroleum engineer for Cities Service Oil Co., has been transferred from Bartlesville to Seminole, Okla.

J. A. McIntosh has been named district development geologist at the new office of Cities Service Oil Co. (Del.) at Billings, Mont. **Mac Fitts** will be district geophysical supervisor, and **C. P. Kimpel,** district landman.

J. F. Minter, junior mechanical engineer for Shell Oil Co. at Houston, has been transferred as mechanical engineer to Donaldsville, La.

Howard B. Shelton, superintendent of the natural-gas and gasoline division for Sohio Petroleum Co. at Edmond, Okla., has been named assistant to the manager of production operations and in that capacity will have direct charge of the southern division and West Edmond Hunton lime unit operations. He will also continue to serve as superintendent. **Clayton Nygaard,** formerly superintendent of operations at the Shreveport, La., district, has been transferred to the West Edmond unit as superintendent succeeding **John Riise,** who is now associated with C. L. Carlock, Inc. **Dannie W. Smith,** assistant superintendent of operations for the Kansas district, has been transferred to the Shreveport district as superintendent of operations succeeding Nygaard. Other changes in the firm include: **Joe Coffield** has been named assistant superintendent of operations at the Shreveport district, and will continue in the position of district engineer; **Ben. H. Freeman** has been named assistant superintendent of operations at the Lafayette, La., district; and **Louis R. Records** has been named production foreman of the Lafayette district with offices in Lake Charles, La.

W. C. Osborne, formerly district geologist in Midland, Tex., for Tide Water Associated Oil Co., has joined Union Sulphur & Oil Corp. in Midland, as district geologist.

Joe B. Randel, mechanical engineer for Pan American Pipe Line Co. at Longview, Tex., has been transferred to Houston as assistant to the purchasing agent. **R. A. Andrews,** formerly mechanical engineer at Alvin, Tex., replaces Randel at Houston.

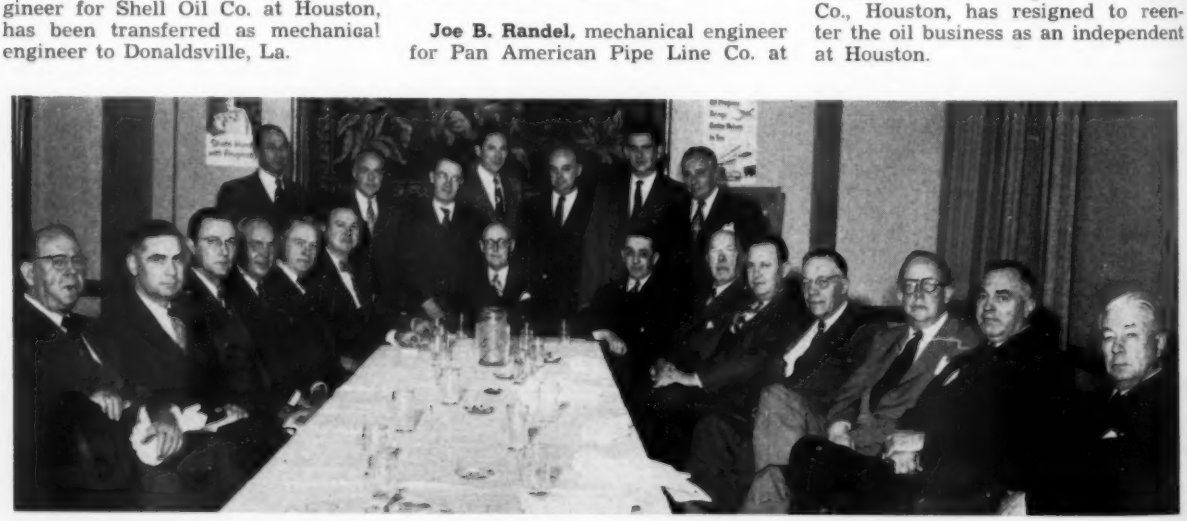
P. L. Reichard became general superintendent of the Tulsa Pipe Line Division of Gulf Refining Co., January 1 on the retirement of **J. R. Murphy** after 42 years' service with the organization. Reichard has been with the company 37 years; for the last 11 years he has been assistant general superintendent; in the previous 10 years he was division superintendent of Gulf's east line.

Dom Jonovich, geologist for Independent Co., has moved his office from Shawnee to Seminole, Okla.

Blair Cherry, formerly head football coach at University of Texas, has resigned to enter the oil business with his brother, **A. W. Cherry,** of Dallas, coowner of Cherry & Beebe Drilling Co.

George R. Gibson, formerly exploration manager in West Texas for Seaboard Oil Co. of Texas, is now an independent trader and consulting geologist at Midland, Tex.

Howard Van Zandt, formerly head of the land and exploration department for Duval Sulphur & Potash Co., Houston, has resigned to reenter the oil business as an independent at Houston.



O.I.I.C. GROUP.—Members of the steering committee of the Kansas-Oklahoma Oil Industry Information Committee who met in Tulsa recently to map plans for activities during the coming year included, standing: G. F. Bish, Ohio Oil Co.; Chester W. Cleveland, Phillips Petroleum Co.; Paul S. Hedrick, Tulsa World; Luther Williams, Sunray Oil Corp.; R. W. Ellison, Service Pipe Line Co.; Lloyd Unsell, Independent Petroleum Association of America; and R. W. McDowell, Mid-Continent Petroleum Corp. Seated: C. E. Buchner, Independent Petroleum Association of America; Lon Kump, Continental Oil Co.; E. A. Williford, Continental Oil Co.; D. C. Simmons, Cities Service Oil Co.; Ray R. Irwin, Socony-Vacuum Oil Co., Inc.; Robert E. Featherston, O.I.I.C.; H. A. Trower, Phillips Petroleum Co.; Clarel B. Mapes, Mid-Continent Oil and Gas Association; W. G. Skelly, Skelly Oil Co.; D. L. Davis, Phillips Petroleum Co.; G. A. Ames, Phillips Petroleum Co.; H. R. Berg, Ethyl Corp.; Condon MacKay, Carter Oil Co.; and Carl J. O'Hornett, George Oil Co. Trower was chosen for a third year as district chairman. J. B. Smith, Vickers Petroleum Co. (not present) will serve as vice chairman during 1951.

PERSONALS

Frederick L. Convers, recent petroleum engineering graduate from University of Pittsburgh, has joined Stanolind Oil & Gas Co. at Midland, Tex., as district equipment engineer.

R. C. (Bob) Addison, Ohio Oil Co., has been named head of Wichita Falls Landmen's Association. He succeeds **H. P. Hodge,** Magnolia Petroleum Co. Other officers elected: **J. S. Maxwell, Jr.,** Continental Oil Co., vice president; **J. H. Ball,** Phillips Petroleum Co., secretary-treasurer; **J. G. Rowe, Jr.,** Humble Oil & Refining Co., chairman of the executive committee; **F. J. Miller,** Arkansas Fuel Oil Co.; **Myrl Mannschreck,** Mid-Continent Petroleum Corp.; Hodge, and **J. A. Atkinson,** Stanolind Oil & Gas Co., members of the executive committee.

Laurence Andrew, manager of the pipe-line department of General Petroleum Corp., retired January 1 after 38 years of service with the company. Andrew joined General Petroleum in 1912 when the company's pipe line was being built from the San Joaquin Valley to Los Angeles. His first post was division superintendent. He had been manager of the pipe-line department since January 1950. **R. C. Jones,** superintendent of engineers in the marine department, also retired January 1. Jones joined the company in 1922 as an assistant port engineer at the then-new General Petroleum marine terminal on Terminal Island. He became port engineer in 1924, and has been superintendent of engineers since 1925.

William E. Moore, Amerada Petroleum Corp., was transferred January 1 from Houston to Jackson, Miss., as land man to succeed **Clark Baker.**

Max A. Robinson, Superior Oil Co., has been elected president of North Texas Oil Scouts Association. Other officers are: **Douglas N. Moody,** Sinclair Oil & Gas Co., and **Bert L. Stovall,** Pure Oil Co., vice presidents; **Fred W. Jaedicke,** Magnolia Petroleum Co., secretary-treasurer, and **Bert R. Coleman, Jr.,** Phillips Petroleum Co., editor of the year book.

Frank W. Simms, formerly manager of the Oklahoma-Kansas district for Buffalo Oil Co. with headquarters in Tulsa, has been named vice president in charge of the district. He assumed his new position late in December. Before joining Buffalo 3 years ago, Simms was on the staff of both Central Petroleum Co. and Sohio Petroleum Co. **M. I. Taubman** has been named assistant to the vice president, and **Louis Taubman** is now district engineer for Buffalo.

CLUB GETS CHARTER.—The newly formed Petroleum Club of Tulsa received its formal charter from the Secretary of State at Oklahoma City last week. Above is the club's board of directors. Seated left to right: W. P. Z. German, general counsel, Skelly Oil Co.; Earl Sneed, president, Sneed Oil Co., president; Frank B. Taylor, editor, Independent Monthly, secretary. Standing, left to right: H. M. Cocley, assistant metallurgical engineer, Bethlehem Supply Co.; James H. Gardner, Jr., independent oil operator; Lloyd E. Elkins, director of production research, Stanolind Oil & Gas Co.; F. E. Swenson, manager of the land department, Deep Rock Oil Corp.; Samuel T. Coleman, land department, Carter Oil Co.; and Frank Frawley, president, Frank Frawley Drilling Co. Other officers and board members not present when the picture was taken include: John O. Campbell, Jr., superintendent of natural gas and gasoline, Carter Oil Co., vice president; Robert H. Wood, president, Broswood Oil Co., treasurer; Sam J. Rhoades, independent oil operator; Robert L. Kinkaid, independent oil operator; Stewart W. Mark, attorney, Gulf Oil Corp.; and James McWilliams, attorney, The Texas Co.

DEATHS

Brig. Gen. Walter Braxton Pyron, 68, retired vice president of Gulf Oil Corp. and World War II general, died January 8 in San Antonio. His 43 years with Gulf established the most extensive service record of any production department official with the company. He retired in May 1950. The general was one of the planners and organizers of the Army-Navy Petroleum Board in World War II. He served as chairman of the war department committee on liquid fuels and lubricants.

Lawrence E. Smith, director of research at the Washington office of the Independent Petroleum Association of America, died January 6. Smith, long known for his series signed simply by the name of "Elick Botts, Consulting Pumper, Grayhorse, Okla.," had witnessed the origin of the I.P.A.A. He moved to Tulsa in 1926, where he was in charge of the editorial office of National Petroleum News in the Mid-Continent area. It was from this post that he moved to the position of research director for I.P.A.A. at Tulsa, being transferred to the Washington office of the association in 1943.

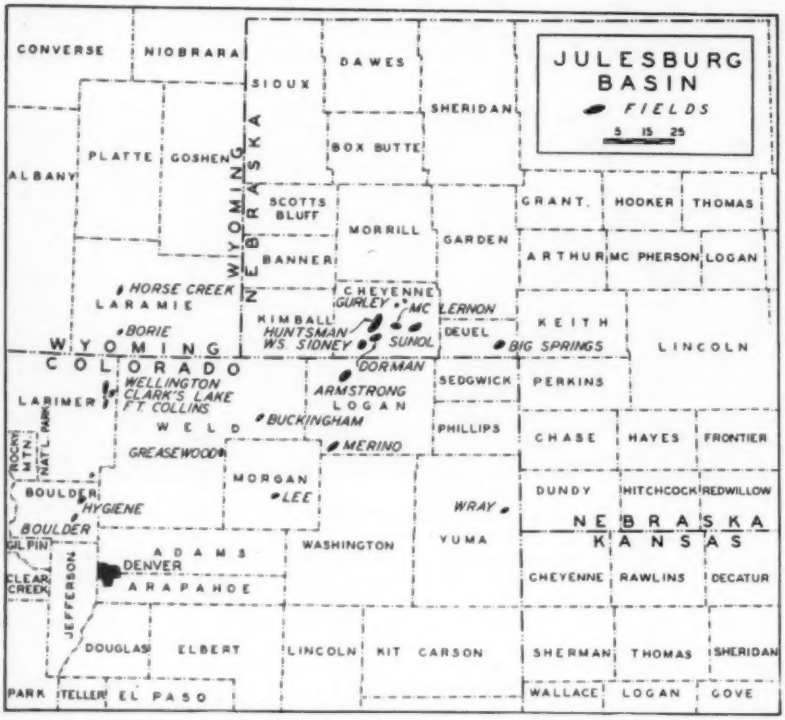
Alvin D. Whitman, 58, Houston, independent oil operator and drilling contractor who formerly lived in Tulsa, died January 3 in Denison, Tex. From 1919 to 1932, Whitman was employed in Tulsa as a petroleum engineer for Twin States Oil Co., now Sun Oil Co.

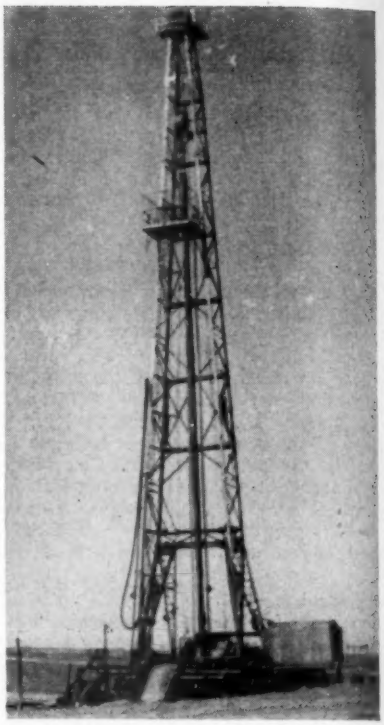
Harrison F. Carr, veteran Louisiana oil and gas man and president of the Petroleum Club of New Orleans, died January 1. For the past 23 years he was district manager in the Baton Rouge and New Orleans areas for United Gas Pipe Line Co. and Union Producing Co. He retired from active service on November 1, 1950.

Charles F. Hesselbach, Sr., 59, chief mechanical engineer for Esso engineering department of Standard Oil Development Co. in Linden, N. J., died January 2 in Elizabeth, N. J. He had been associated with Standard Oil Development for 26 years.

Edward Greene, 81, veteran Oklahoma oil man, died in Glenpool, Okla., December 31. He designed and helped build the first gasoline plant in Oklahoma many years ago.

J. Perry Scranton, 57, prominent Texas and Louisiana independent oil operator, died January 4 at Houston. He was president of Mikton Oil Co., and vice president of Fifteen Oil Co.





Left: Regional geographic map of southwestern Nebraska, northeast Colorado and southeast Wyoming, showing location of the Huntsman-McLernon-Dorman area in relation to other pools in the Julesburg basin. Right: Portable mast and drilling rig of Loffland Brothers Co. drilling at Ginther, Warren & Ginther, 5 Clarence A. Dorman, a second or "G" sand oil-well completion in the new Dorman field, in Cheyenne County, Nebraska.

Several Favorable Economic Factors Spur Current Play in Julesburg Basin

by Joseph A. Kornfeld
District Editor

DEVELOPMENT of Huntsman, McLernon, and Dorman fields lying north of the town of Sidney in Cheyenne County, southwestern Nebraska, commands current field interest in the northeast limb of the Julesburg basin. Six rigs are active in the area at this writing.

A series of favorable economic factors features this new development such as (1) the high gravities of crude oil, 38°-40°, (2) existence of major pipe-line outlet, (3) rapid drilling, 6 to 10 days from surface-casing point to top of the Dakota series, (4) generally high productivity, 100 to 400 bbl. per day per well, (5) existence of multiple-sand reservoirs in the Dakota (Graneros) series, and (6) lack of serious production problems.

Dorman Field

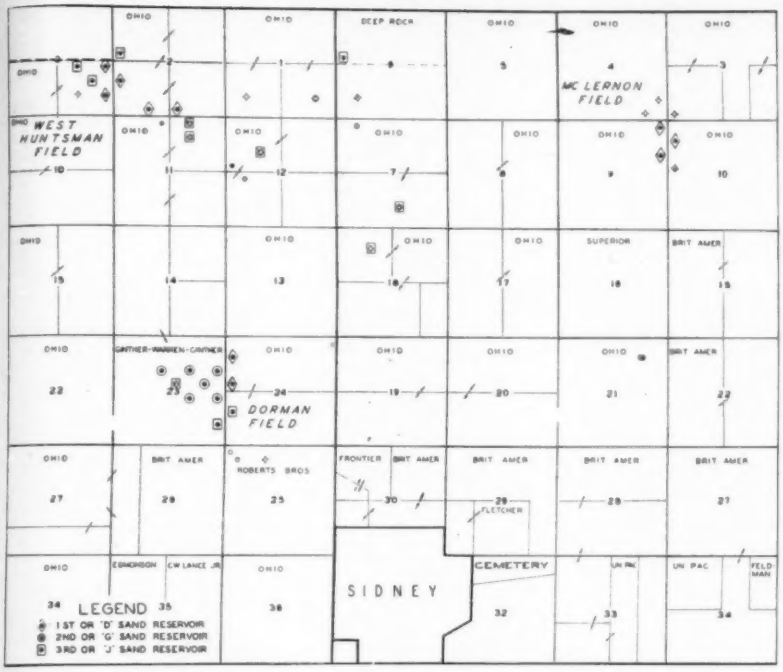
Among the several areas receiving development at this time, of particular interest is Dorman field, located 1½ miles northwest of Sidney. Nine oil wells and one gas-distillate well have been completed since July 4, 1950, in a series of Dakota sands. More than 480 acres has been proven productive in this field to date and field limits have been established only on the southeast side.

Crude outlet. — Crude from the Dorman area is trucked to the town of Bridgeport, about 30 miles north of Sidney, to the pumping station of the Service Pipe Line Co.

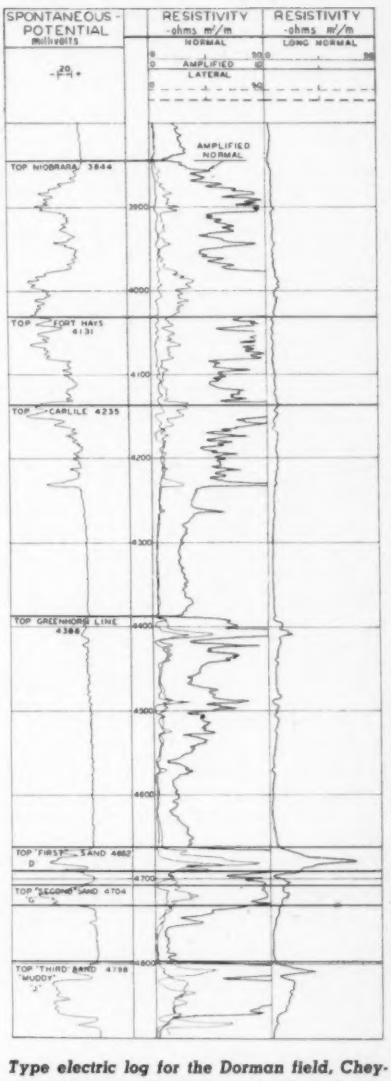
Ohio Oil Co. moves it own oil via its gathering system located at Huntsman and in Dorman field. Currently, crude-oil purchasers are taking about 135 bbl. per day per well in the area. Price is Mid-Continent posted schedule less gathering and hauling charges.

Discovery oil well. — The Dorman area was discovered on July 4, 1950, by Ginther, Warren & Ginther et al., Houston, at their 1 Clarence A. Dorman, SW SE NE 23-14n-50w. The well was spudded on June 24, 1950, and completed in less than 10 days. It was drilled on a block of 960 acres owned by Ginther, Warren & Ginther, Houston, (50 per cent); Kinney Coastal Oil Co., Denver, (25 per cent); and L. W. Young, Oklahoma City, (25 per cent).

The first or "D" sand (see table) carried gas on drill-stem test run at 4,669 ft. Packer was set at 4,656 ft. and tester was open for 30 minutes. On a ½-in. bottom-hole choke, it produced at the rate of 4,000 M.c.f. per day. The second or "G" sand was drill-stem tested at 4,690 ft. With packer set at 4,684 ft., tool was open for 54 minutes, and flow was 1,250 M.c.f. per day. Recovery in drill pipe was 105 ft. of oil and 15 ft. of drilling mud. Six additional feet of hole was cut to 4,696 ft., total depth, and the "G" sand was again drill-stem tested. With packer set at 4,683 ft., and test-



Detailed field plat showing oil and gas fields in the Huntsman-McLernon-Dorman area, Cheyenne County, Nebraska.



Type electric log for the Dorman field, Cheyenne County, Nebraska, showing formations extending from top of the Niobrara chalk series down through the third or "J" sand of the Dakota series. The well is Ginther, Warren & Ginther et al. 3 Dorman, SW SW NW 23-14n-50w, total depth 4,284 ft., completed on September 22, 1950. It is a gas-distillate well in the third of "J" sand produced through gun-perforations from 4,707-11 ft. Mud resistivity is 3.0 ohms m²/m. at 63° F., and electric spacings are AM = 16 in., A = 64 in.

ing tool open for 30 minutes, gas rose to the surface in 7 minutes. Flowing bottom-hole pressure was 675 psi. and shut-in bottom-hole pressure was 1,125 psi. Recovery in drill pipe was 2,700 ft. of 37°-gravity oil.

The well made five heads of oil while coming out of the hole with the tester. An open-hole completion was made and the 7-in. long string was set and cemented at 4,681 ft. Initial production was 352 bbl. daily.

Development program.—To date, Ginther, Warren & Ginther has completed six oil wells in the second sand and a gas-distillate well (shut in) from the third or "J" sand. An oil rim in the "J" sand is being tested at their 8 C. A. Dorman, NE SE SE 23-14n-50w, located ½ mile southeast of the gas-distillate discovery. (The "J" sand produces in Huntsman and West Huntsman fields from 1½ to 2 miles to the north). The Dorman structure is cut by two faults, the eastern one exhibits 80 ft. of displacement on the Greenhorn lime. The wells drilled on the Dorman fee lie on the west, upthrown side of this eastward fault.

On the east, downthrown side of the eastward fault, Ohio Oil Co. has completed three oil wells to date:

First or "D" sand: 1 Fred J. Beyer, SW NW NW 24-14n-50w; 2 Fred J. Beyer, SW SW NW 24-14n-50w.

Second or "G" sand: Carried water.

Third or "J" sand: 1 J. Elsasser, SW NW SW 24-14n-50w.

Discovery gas well.—A gas-distillate well was completed September 22, 1950, from the third or "J" sand at Ginther, Warren & Ginther et al., 3 C. A. Dorman, SW SW NE 23-14n-50w. It was drilled to a total depth of 4,890 ft. in the third or "J" sand topped at 4,798 ft. (—513 ft.). Drill-stem tests indicated gas in the first sand. The second sand carried a thin oil column underlain by salt water. Recovery in the third sand was 120 ft. of oil and gas-cut mud. The 7-in. pipe was set at 4,888 ft. Estimated open flow was 5,000 M.c.f. per day.

McLernon Field

Four miles northeast of Dorman field, and updip from this area and the Huntsman "J" sand oil and gas wells, lies the new McLernon oil pool discovered on June 9, 1950. The area was opened by Ohio Oil Co. 1 John M. McLernon, NE NE NE 9-14n-49w, from the first or "D" sand reservoir topped at 4,490 (—184 ft.). Total depth is 5,014 ft. Production was obtained through casing perforations at 4,490-4,504 ft. Initial gage was 126 bbl. of oil in 24 hours on the pump. To date, three oil wells have been completed from this reservoir. Three dry holes mark the north limits. A fourth dry hole has been completed on the southeast side.

Huntsman Field

A new shallower oil reservoir["D" (?) sand] was proven recently for the Huntsman area proper by Ohio Oil Co. 2 Orian Mather, SW SW NW 12-14n-50w. It swabbed 234 bbl. of oil and no water in 10 hours, after drilling out cement plug in the 7-in. pipe at 4,692 to 4,709 ft. It is the diagonal southwest offset to its 1 O. Mather "J" sand gas well in NW SE NW 12-14n-50w. This completion is due to initiate new development.

"J" sand gas reservoir.—A group of six gas wells have been completed from the "J" sand reservoir from 2 to 4 miles north of the town of Sidney from an average depth of 4,820 ft. Two dry holes have been drilled in this area. These wells were drilled on field pattern, but the effective spacing may be considered to be in the order of 160 acres. Depth to the top of the "J" sand ranges from as shallow as —443 ft. to as low as —507 ft.

Locally, the Huntsman area is inter-

INDIVIDUAL WELL DATA — (ELECTRIC-LOG DETERMINATIONS FOR DORMAN, HUNTSMAN, WEST HUNTSMAN, AND McLERNON FIELDS, CHEYENNE COUNTY, NEBRASKA

Operator, Well, Location, and Section—	"D" Sand actual	"D" Sand subsea	"G" Sand actual	"G" Sand subsea	"J" Sand actual	"J" Sand subsea	Total depth
DORMAN FIELD—							
Ginther, Warren & Ginther 1 C. A. Dorman, SW SE NE 23-14n-50w	4,638	—350	4,697*	—379			4,696
Ginther, Warren & Ginther 2 C. A. Dorman, NE SW NE 23-14n-50w	4,690	—374	4,726*	—410			4,742
Ginther, Warren & Gintner 3 C. A. Dorman, SW SW NE 23-14n-50w	4,662	—378	4,706	—422	4,798†	—514	4,890
Ginther, Warren & Ginther 4 C. A. Dorman, NE SW SE 23-14n-50w	4,640	—369	4,673*	—402			4,685
Ginther, Warren & Ginther 5 C. A. Dorman, NE SE NE 23-14n-50w	4,649	—365	4,686*	—396			4,705
Ginther, Warren & Ginther 6 C. A. Dorman, NE NE SE 23-14n-50w	4,647	—365	4,688*	—406			4,704
Ginther, Warren & Ginther 7 C. A. Dorman, NE SE NW 23-14n-50w	4,674	—376	4,714*	—416			4,720
Ginther, Warren & Ginther 8 C. A. Dorman, NE SE SE 23-14n-50w	4,635	—301	4,680	—432	4,787*	—543	4,850
Ohio Oil Co. 1 F. J. Beyer, SW NW NW 24-14n-50w	4,735*	—408					4,747
Ohio Oil Co. 2 F. J. Beyer, SW SW NW 24-14n-50w	4,708*	—399					4,724
Ohio Oil Co. 1 Elsasser, SW NW SW 24-14n-50w	4,676	—411	4,693	—458	4,792*	—557	4,808
Roberts 1 Elsasser, C NE NW 25-14n-50w	4,680‡	—428	4,724‡	—472			4,879
Feldman 2 Elsasser, NW NW NW 25-14n-50w	4,612‡	—413					
HUNTSMAN—							
Deep Rock 1 L. Jiemen, SW SW NW 6-14n-49w	4,689*	—404	4,728	—441	4,824*	—537	4,845
Ohio Oil Co. 1 Benson, SE NW NE 11-14n-50w			4,695	—354	4,826†	—485	4,935
Ohio Oil Co. 2 Benson, NE NW NE 11-14n-50w			4,681	—344	4,817†	—480	4,915
Ohio Oil Co. 1 A. Cruise, NW SW SE 7-14n-49w	4,619	—322	4,680	—383	4,740†	—443	5,194
Ohio Oil Co. 1 Brockelsby, NW SE SE 1-14n-50w	4,638	—317	4,688	—367	4,794†	—473	4,906
Ohio Oil Co. 1 O. Mather, NW SE NW 12-14n-50w	4,661	—342	4,696	—377	4,801†	—482	4,905
Ohio Oil Co. 1 K. Ruchnun, SW NE NW 18-14n-49w	4,677	—374	4,707	—404	4,810†	—507	4,913
Ohio Oil Co. 1 N. Ladegarel, NE SW SW 1-14n-50w					4,864‡	—530	4,950
Ohio Oil Co. 1 G. Nieman, NE SW SW 6-14n-49w			4,710‡	—396	4,860‡	—546	4,875
HUNTSMAN WEST—							
Ohio Oil Co. 1 M. Gurschke, SW NE SE 3-14n-50w	4,722	—372	4,766	—416	4,862*	—512	4,980
Ohio Oil Co. 2 M. Gurschke, NE NW SE 3-14n-50w	4,734	—384	4,775	—425	4,870*	—520	4,982
Ohio Oil Co. 3 M. Gurschke, NE SW SE 3-14n-50w	4,738‡	—380	4,788‡	—430	4,885‡	—527	4,982
Ohio Oil Co. 4 M. Gurschke, NE NE SE 3-14n-50w	4,700*	—364	4,750	—414	4,843	—507	4,956
Ohio Oil Co. 5 M. Gurschke, NE SE SE 3-14n-50w	4,731*	—378					4,768
Ohio Oil Co. 1 H. Blonke, SW NW SW 2-14n-50w	4,720*	—365	4,767	—412	4,864	—509	4,950
Ohio Oil Co. 2 H. Blonke, SW SE SW 2-14n-50w	4,720*	—376					4,746
Ohio Oil Co. 1 H. Ruff, SW SW SE 2-14n-50w	4,688*	—350					4,710
Ohio Oil Co. 2 A. Cruise, SW SW NW 2-14n-50w	4,680*	—364	4,730	—414	4,827	—511	4,915
McLERNON—							
Ohio Oil Co. 1 Miller, NE SE SE 4-14n-49w	4,575‡	—324					4,614
Ohio Oil Co. 2 Miller, SW SE SE 4-14n-49w	4,511‡	—290					4,555
Ohio Oil Co. 1 McLernon, NE NE NE 9-14n-49w	4,490*	—284	4,552	—346	4,617	—411	5,014
Ohio Oil Co. 2 McLernon, NE SE NE 9-14n-49w	4,515*	—288					4,522
Ohio Oil Co. 1 Schwenick, SW NW NW 10-14n-50w	4,466*	—268					4,483
Ohio Oil Co. 2 Schwenick, SW SW NW 10-14n-50w	4,518‡	—300					4,543
Ohio Oil Co. 1 Kratz, SW SW SW 3-14n-50w	4,540‡	—311	4,607	—377	4,670	—440	4,712

*Oil; †gas; ‡dry.

rupted by a series of faults which occur in the Niobrara-Greenhorn section. These have been observed as:

Operator and fee	Location	Depth (subsea)	Amount of displacement
Ginther, Warren & Ginther, 5 C. A. Dorman	NE SE SE 23-14n-50w	—215	80
Ohio Oil Co., 1 Brockelsby	NW SE SE 1-14n-50w	+ 31	190
Ohio Oil Co., 1 H. Ruff	SW SW SE 2-14n-50w	—157	90
Ohio Oil Co., 1 A. Cruise	NW SW SE 7-14n-49w	+217	40
Ohio Oil Co., 2 Benson	SE NW NE 11-14n-50w	+211	90

North flank oil reservoir.—On the north flank of the Huntsman gas structure, a "J" sand oil reservoir was discovered on August 24, 1950. Deep Rock Oil Corp. and Frontier Refining Co. 1 L. Siemers, SW SW NW 6-14n-49w, was completed for 200 bbl. of oil and 20 bbl. of salt water per day from the "J" sand through gun perforations from 4,823-25 ft. with eight shots. The well was carried to a total depth of 4,845 ft.

West Huntsman Field

Immediately west of Huntsman field proper, eight oil wells have been completed and placed on production since May 1950 from the Dakota (Graneros) series to prove more than 440 acres. One dry hole has been drilled in this area. Six completions lie in the "D" reservoir, the remainder being in the "J" sand. These are located in Sections 2 and 3, in Township 14n-50w. Structure is a low-relief, westward-dipping terrace.

In the development of the oil fields of the Dakota (Graneros) series in the Huntsman area, staggered 20-acre spacing has been followed with few exceptions. This is especially true in the gas fields so that oil rims may be developed with regularity of pattern.

A minimum of 6 days is required to drill the average well from the surface pipe to casing point, roughly an interval of 4,300 ft. in the Huntsman area. The amount of wire-line coring and drill-stem testing will influence this figure.

Casing and cementing.—Casing and cementing practices employed in the development of these fields may be summarized as follows:

Pipe size	Dorman	McLernon	Huntsman	West Huntsman
$10\frac{3}{4}$-in.	444 ft. (285 sx.)	235 ft. (145 sx.)	410 ft. (275 sx.)	451 ft. (285 sx.)
7-in.	4,700 ft. (285 sx.)	4,509 ft. (200 sx.)	4,692 ft. (200 sx.)	4,937 ft. (300 sx.)

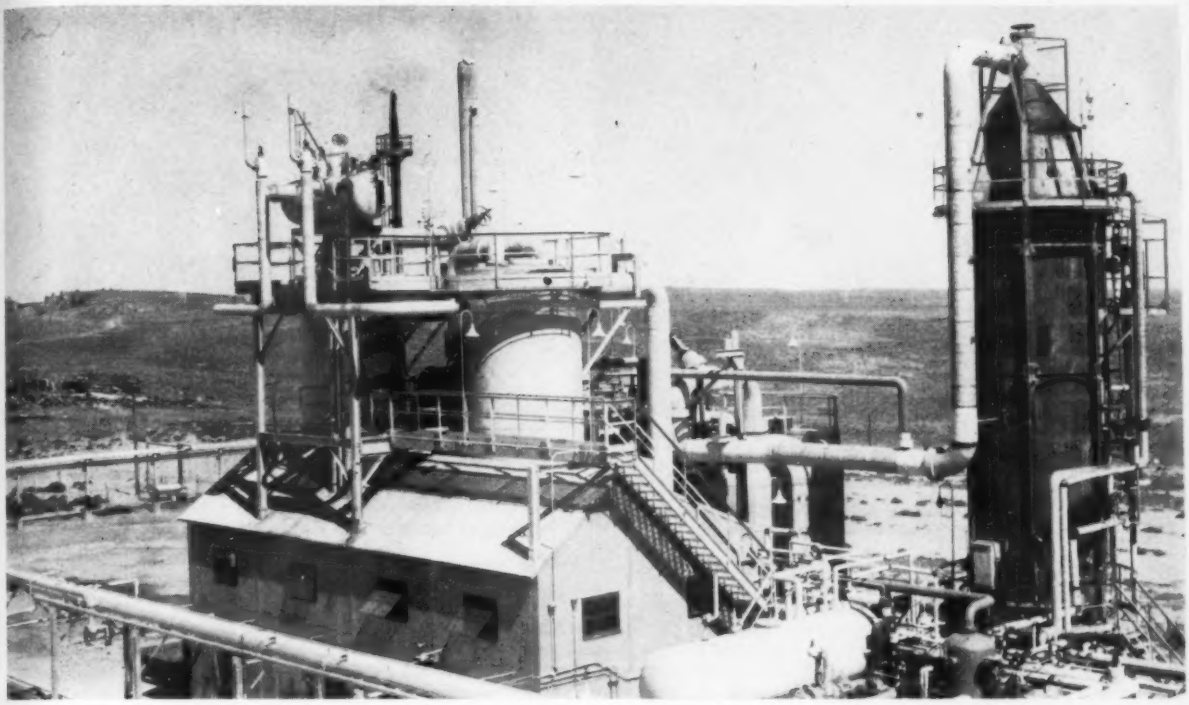
The practice of setting pipe on top of the sand is popular in the Huntsman area. Lithology of the basal Graneros series itself is not bentonitic, but a bentonite lying immediately above the Niobrara chalk changes characteristics of the drilling mud. This condition would affect the productivity of the sand if rotary drilling mud were allowed to remain in contact with the Dakota sands for any length of time.

Wire-line coring is widely used in this development. Ten-foot cores are taken where geologic and reservoir data dictate requirements. Crews run wire-line type barrels in seeking the top of the pay.

Completion.—After the long string is set and cemented, wells are drilled in with rotary tools. Well head is installed and after the cement plug is drilled, enough pay is drilled to assure initial well size. Two and one-half-inch tubing is run in most cases. All wells are initially swabbed for a period of from 6 to 8 hours in the Dorman area. A sufficient volume of solution gas is present to clean the well quickly on the more favorably situated wells. Rods are run and temporary pumping equipment set pending installation of permanent units.

Acknowledgment

Acknowledgment is made to W. M. Angle, geologist, and to N. C. Ginther, W. L. Ginther, and H. C. Warren of the principal operating firm in the Dorman area for permission to publish certain data carried in this paper. Miss Lorene Shipp, secretary, aided in the collection of the data.



In this view of the sulfur-recovery plant the acid-gas is shown right with the reactor chambers behind the building.

Production of Sulfur

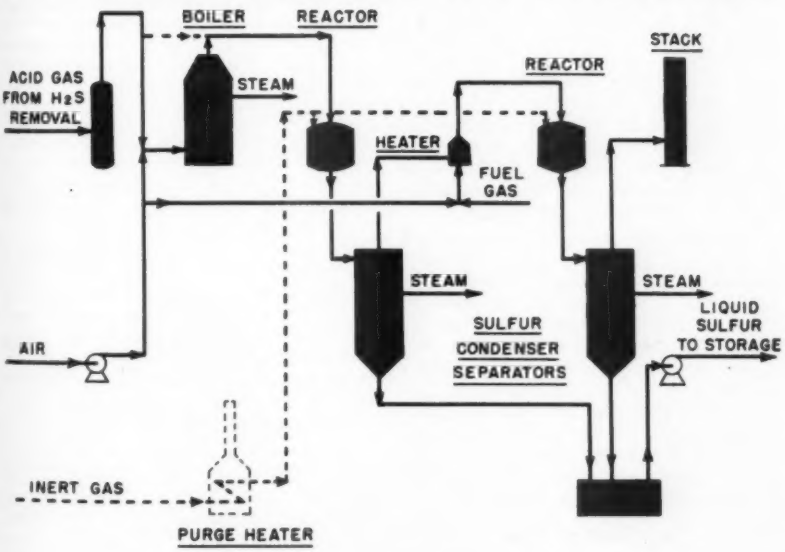


Fig. 1—Schematic flow arrangement of the sulfur-recovery plant.

From Hydrogen Sulfide

at Elk Basin, Wyoming, Repressure Plant

by Maurice Webb*

DURING July 1949, Stanolind Oil & Gas Co. placed a sulfur-recovery unit in operation at the Elk Basin repressure plant. The plant is located in Elk Basin field, Park County, Wyoming, and is operated by Stanolind for a group of coowners.

The sulfur unit receives its feed of hydrogen sulfide gas, the base material used to produce sulfur, from a Girdler monoethanolamine sweetening unit that is located in the repressure plant. The average feed-gas composition to the sulfur unit is 22 per cent carbon dioxide, 70 per cent hydrogen sulfide, and 8 per cent water vapor. Hydrogen sulfide is converted into elemental sulfur by a modified Claus process. The unit is designed to produce 80 long tons per day of sulfur having a minimum purity of 99.5 per cent.

The Claus process is a simple, straightforward operation in which hydrogen sulfide is partially oxidized by burning to form a mixture of sulfur dioxide and hydrogen sulfide, which then combine in the presence of a catalyst to form elemental sulfur. The process is represented by the following chemical equations:

(a) $\frac{1}{3}\ H_2S + \frac{1}{2}\ O_2 \rightarrow \frac{1}{3}\ SO_2 + \frac{1}{3}\ H_2O$

(b) $\frac{2}{3}\ H_2S + \frac{1}{3}\ SO_2 \rightarrow S + \frac{2}{3}\ H_2O$

(c) $H_2S + \frac{1}{2}\ O_2 \rightarrow S + H_2O$

The chemical balance indicates that one-third of the hydrogen sulfide is burned to form sulfur dioxide which

*Stanolind Oil & Gas Co. Presented at A.I.Ch.E. meeting, Tulsa.

Sulfur flowing from transfer line to storage vat.

Stock pile of sulfur at rail loading site, crusher-conveyor in background.

then reacts with the remaining hydrogen sulfide to form elemental sulfur and water. The over-all equation is the reaction of 1 mol of hydrogen sulfide with 1 mol of oxygen to give 1 mol of sulfur and 1 mol of water vapor.

The chemical equation expressed as a plant process is represented by the simplified flow diagram, Fig. 1.

From the flow diagram, it is noted that the acid gas or hydrogen sulfide is first burned in a special boiler with a gas-tight pressure case, where heat is liberated and recovered as useful 200-psig. steam. In the boiler, the acid gas-to-air ratio is controlled to result in burning one-third of the total hydrogen sulfide feed to sulfur dioxide, in accordance with Equation (a) above.

Boiler-Stack Gases

The boiler-stack gases pass through the first reactor, which is filled with a bauxite catalyst, then to a condenser-separator where the temperature is reduced sufficiently to condense sulfur and still retain it in a molten state. The Elk Basin condenser-separator is a special type of waste-heat boiler that produces useful 35-psi. steam.

To increase the over-all conversion of hydrogen sulfide to elemental sulfur, the off gases from the first condenser-separator flow through a gas-fired in-line heater to a second reactor and condenser-separator. The in-line heater is fired under pressure with vent gases entering the acid-gas stream. The second reactor and condenser-separator are identical to the first units. Waste gases composed of steam, carbon dioxide, nitrogen, and a small amount of sulfur fog and unreacted hydrogen sulfide and sulfur dioxide pass to the atmospheric stack vent from the last and final condenser-separator.

The furnace operates at a positive pressure of approximately ¾ psig. so that process gases can flow through the equipment and discharge the spent gases to the vent stack without a booster blower. An inert-gas purge system has been provided for heating and cooling the reactor beds when the unit is placed on stream or shut down.

Temperature control is important because in operation, if the reactor temperature is low, liquid sulfur may condense on the catalyst and in the vapor transfer lines. If the reactor temperature is too high, sulfur recovery decreases. In actual operations, the optimum temperature will vary slightly due to varying amounts of steam and carbon dioxide in the acid gas fed to the plant. It appears that in this plant the optimum temperature is approximately 475° F.

The reaction of sulfur dioxide and hydrogen sulfide to form elemental sulfur in the reactors is exothermic, and heat is released at the rate of about 43,000 B.t.u. per pound-mol of sulfur dioxide. For this reason, the outlet temperature from the No. 1 reactor rises above the optimum desired and also accounts for the condition that about 85 per cent of the potential sulfur is produced in the first reactor and that two reactors are necessary for high recovery.

Temperature Rise

During typical operations when the plant is processing 1,470,000 standard cubic feet per day of acid gas and producing about 37 long tons of sulfur per day, there is a temperature rise of about 225° F. across the No. 1 reactor and 25° F. across the No. 2 reactor.

Inlet temperature to No. 1 reactor is 430° F. and is controlled by bypassing more or less acid gas around the boiler. At full-plant-load conditions, a maximum of two-thirds of the acid gas can be bypassed and at light loads when boiler efficiency is high, a smaller amount is bypassed. Under present conditions when processing about 1,470,000 standard cubic feet per day of acid gas, the inlet temperature of 430° F. is maintained by bypassing about one-third of the acid gas feed.

Inlet gas temperature to No. 2 reactor is controlled by an in-line heater that operates on natural gas with the products of combustion entering into the flow of gas from No. 1 condenser-separator. The inlet temperature is controlled at 460° F. with an outlet temperature of 485° F.

Gases entering the condenser-separators from the reactors are cooled to about 290° F. The condenser-separators are currently producing about 2,400 lb. per hour of 35-psig. steam. With steam pressure in this range, the temperature of the sulfur condensed is such that it is very mobile and runs by gravity to a collection pit. The sulfur is transferred by a pump to the plant storage vat where it is allowed to cool and solidified into large blocks approximately 35 ft. wide, 60 ft. long, and 20 ft. high.

All lines and valves used in liquid sulfur service are steam jacketed. The jackets use 35-psig. steam, which keeps the sulfur at the proper temperature for easy handling. The lines are designed to be self-draining in the event of transfer-pump failure.

When a large block of sulfur is built up, it is broken into small pieces by blasting with dynamite. The blasted material is loaded into trucks with a high lift loader and transported to the rail site for either further storage or shipment. When the sulfur is shipped, it is dumped into a crusher conveyer that loads directly into standard-type railroad box cars.

Baash-Ross News

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Plus Faster Pipe Handling

Plus Safer Rig Operations

BAASH-ROSS *Lifting Type* Thread Protectors

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Built-in bail speeds lifting operations

Take a close look at the Baash-Ross Lifting Type Thread Protectors shown below. Note that they are cast in one solid piece with a built-in bail through which a rope or catline hook can be quickly inserted for pulling, lifting and handling operations. No need to waste time with dangerous rope slings that slip or knots that jam. Just hook into the bail of the Thread Protector and you can lift, pull or hang the product to which it's attached—without risk of dropping or damage.

Streamlined design minimizes friction

And here's another feature that means safer, faster operations. Note how the body is *completely streamlined* for smooth, friction-free efficiency—with no projections, sharp edges or open loops to catch in other pipe or rig equipment. Whatever tight places the product itself will pass through, these streamlined Protectors will also pass through—freely and easily—without "hanging up." What's more, the ball-shaped body provides a perfect "glide" for dragging such heavy items as drill collars, kellys, subs and reamers without tearing up the floor, damaging other equipment—or, of course, damaging the threads on the product!

There's nothing that can equal the all-around utility of these new Baash-Ross Lifting Type Thread Protectors. And they're an investment that keeps on paying dividends throughout years of heavy-duty service. In fact, there's practically no wear-out to them. They are made of rugged cast steel and the threads are accurately machine-cut for easy make-up.

Full range of sizes for all types of popular threads—both Pin and Box Joints!

Baash-Ross Lifting Type Thread Protectors are another of the many Baash-Ross products available from leading supply stores. Or *write direct for full details.*

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. . . you lift, pull or drag heavy equipment around a rig in just one day—then check the greater speed and safety of using Baash-Ross Lifting Type Thread Protectors—and you readily see why here is one item that really adds up to BIG Savings in a short time. . .

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CHECK OVER THESE FEATURES!

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- Built-in bail simplifies lifting, pulling and handling operations. Simply hook-in and start pulling—no dangerous slings or knots to worry about or to waste crew time!
- Ball-shaped body protects floor against damage, speeds hauling and dragging operations!
- Unique thread design permits screwing Box and Pin Protectors together to simplify storage and save space when not in use!
- Machine cut threads assure accurate thread fit and easy make-up!

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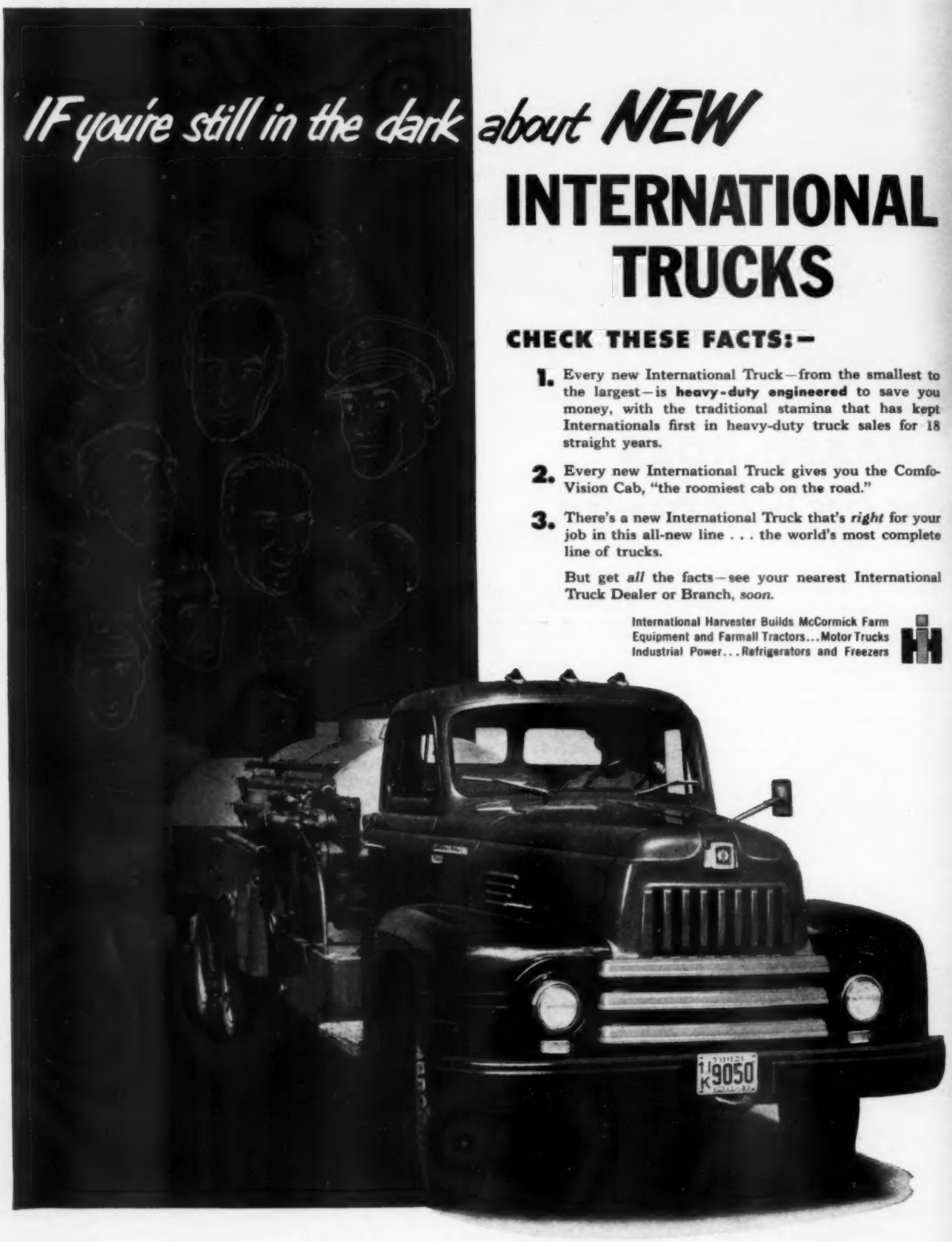


ALL NEW, ALL PROVED

INTERNATIONAL TRUCKS

INTERNATIONAL HARVESTER COMPANY CHICAGO

This view of the new sootless carbon black plant at Stanlow, England, shows the unit's furnace sheds on the right of the electrostatic precipitators and cyclone separators.

Britain Gets "Sootless" Carbon-Black Plant

American-owned plant at Stanslow utilizes exhaust gases as fuel. Recovery and cleansing equipment guards against smoke nuisance.

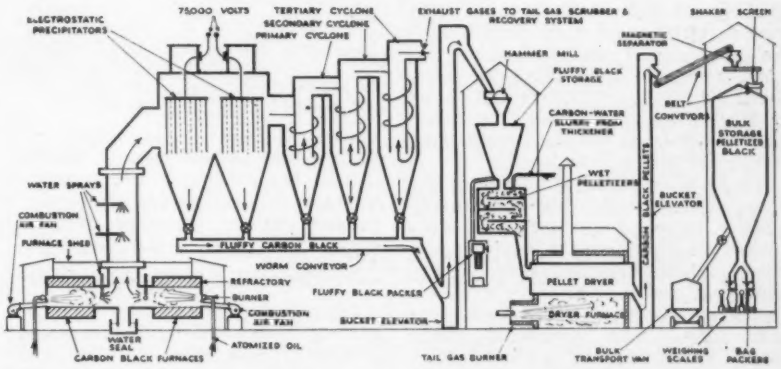
by V. S. Swaminathan

THE first entirely American-owned carbon-black plant, built at Stanlow, Cheshire, in Britain with a Marshall Plan "investment guarantee," was recently opened by Cabot Carbon Co., Ltd. This firm is a wholly owned subsidiary of Godfrey L. Cabot, Inc., of Boston, which invested approximately $2,400,000 in the project.

The modern "sootless" plant on the south side of the Mersey River was built under the ECA investment program, created to attract private United States capital into Europe to assist in the economic recovery of the war-devastated continent. With the approval of the United Kingdom Government, ECA assured the convertibility into dollars up to a total of $2,025,000 of any sterling profit or other return on the dollar investment.

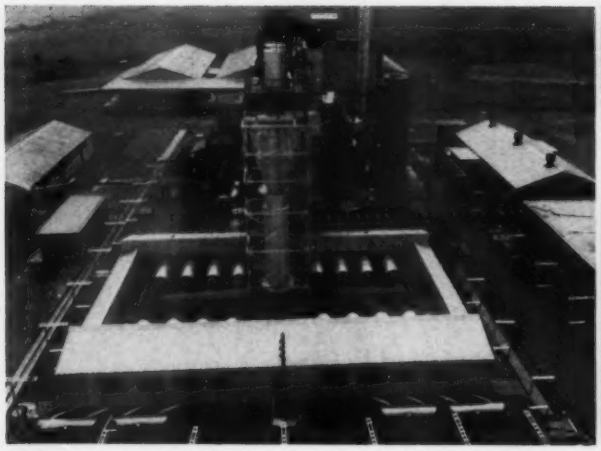
One result stemming from the oil utilization process employed, is that carbon-black plants can now be located near the consuming market rather than at the source of the raw material. Due to packaging and handling problems involved in transporting carbon black it is generally cheaper to ship the liquid raw material a given distance than it is to transport the black made from it. This economy helps to offset the higher conversion costs inevitable in Britain resulting from the smaller market, smaller scale of operations, and higher cost of plant.

The Stanlow plant and process possess certain features over other carbon-black units not excluding those in the United States. The utilization of exhaust gases obviates the purchase of fuel, which would be a major operating expense for competitive processes in Europe. The ability to use a cheap petroleum refinery residue rather than more valuable distillates is another factor in favor of the process. No "carrier" or "atomizing" gas is necessary; the liquid residue is the only raw material. The yield is as high as any reported for competitive processes. The process is flexible in that several grades of carbon black can be produced economically without altering the furnaces. Lastly, no carbon black is wasted as smoke from the stacks because of the installation of additional recovery and cleansing equipment which insures freedom from smoke nuisance.

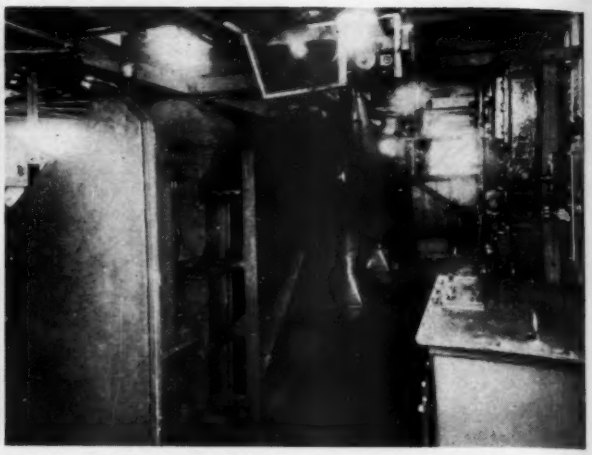


Flow diagram of the process used to produce carbon black at the Stanlow plant of Cabot Carbon Co., Ltd.

The single unit at Stanlow is designed for a maximum daily output of 60,000 lb. of "Vulcan 3" carbon black. Annual production will naturally depend on the number of days on stream but is expected to total 8,000 to 10,000 long tons. It is profitable to work around the clock since operation of the furnaces at the very high temperatures (exceeding 2,500° F.) characteristic of the process requires con-



A view of the carbon black furnaces (foreground) in Cabot Carbon Co., Ltd., new plant in England.



This view of the carbon black plant at Stanlow shows some of the equipment used in pelletizing carbon black.

tinuous operation to avoid frequent cooling and reheating of equipment leading to increased wear. Automatic control is extensively employed. The modified furnace method employs liquid residues to produce carbon black.

Tanker-borne petroleum refinery residues are piped from docks into two large steel storage tanks. The 10-in. pipe line, 1.5 miles long, is equipped with a 2-in. internal steam heating pipe. The raw material (30,000-40,000 tons of petroleum refinery residues) is now obtained from Baton Rouge. High priority is being accorded to finding su .able means of using other raw materials, especially British coal-tar products and residues that may become available from domestic refineries. As further British petroleum refineries are constructed it is hoped that residues of proper specification will become available locally.

The raw material is fed from the large storage tanks into two smaller vessels where it is maintained at a proper temperature to reduce viscosity. The hot liquid is then led into the refractory-lined furnaces with adequate air for partial combustion to take place under controlled conditions. A number of furnaces form the unit, and flues from each meet in a manifold leading to the cooler and collector system. The furnaces are filled with a mass of luminous flame producing temperatures over 2,500° F.

The flue gases carry the suspended carbon black from the furnaces up the stack where water sprays bring the temperature down to 400° F. The water is wholly evaporated and the product remains dry since the gases are well above dew point. The cooled, dry gases now pass through a 75-kv. dry electrostatic precipitator where agglomeration of the fine carbon particles occurs. The precipitated black falls to the bottom into a stainless-steel worm-type conveyor. The stream is then passed through a set of three cyclone collectors and the black removed by centrifugal action. The fluffy black carbon falls to the bottom of the collectors, and is carried through the worm-type conveyor, a bucket elevator, hammer mill, and storage tank to the pelletizers.

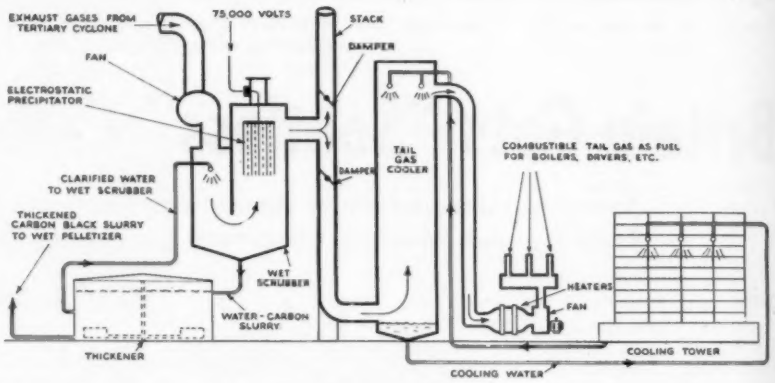


Diagram of the tail-gas scrubber and recovery system used at the new plant of Cabot Carbon Co., Ltd.

Pellets Dried in Rotary Driers

After going through the "wet pelletizing process" the pellets are dried in rotary dryers, when they are ready for packing in paper bags for shipment, or for loading directly into hopper vehicles for bulk delivery. In pellet form carbon black is a granular free-flowing relatively dustless product. Size of the pellets varies from 1/32 to 1/16 in. in diameter. The apparent density is approximately 22 lb. per cu. ft. whereas in fluffy form it is only about 3 lb.

The "waste" gases still carry a limited amount of carbon black as smoke. The recovery plant not only eliminates all smoke, but also produces more black and sufficient clean fuel to fire the boilers, producing steam for central heating in the offices and laboratories, or to heat the rotary dryers and to preheat the liquid raw material. In short, this scheme provides all the supplementary heating required in the process and plant.

The waste gases pass down a pipe from the third cyclone collector through a blower, a water spray, and scrubber to a 75-kv. wet electrostatic precipitation. The wet black is precipitated yielding a water-carbon black slurry, which passes through a thickener to the pelletizer.

The remaining gases pass through a cooler to remove the water vapor and a heater to prevent further condensation and finally a blower. The resulting clean fuel gas is ready for use in the boilers, dryers, etc. White smoke consisting largely of water vapor is discharged into the atmosphere.

The materials-handling operations at Stanlow are highly mechanized. Thus the dried pellets are lifted by a bucket elevator to a suitable height and carried by belt conveyor a short distance to the bulk storage and packaging depot enjoying road and rail facilities. All metal work coming in contact with carbon black is either stainless steel or wrought iron. All of the conveying, wet scrubbing, pellet-

(Continued on page 89)

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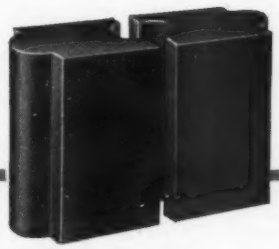

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This low-cost, low upkeep, long-life oil saver cleans the wire line very efficiently. Equipped with extra-heavy duty brass bushings, both *above* and *below* rubber. New rubbers are inserted in minutes. Made for ½" thru 1" wire line sizes. Available with 5½" or 7" Berry Head flange.

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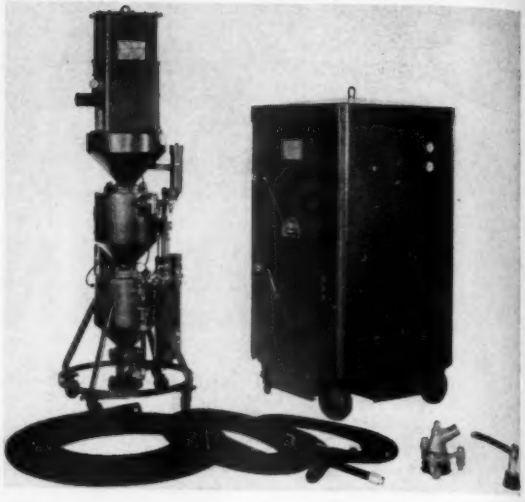
Left: Cleaning the edge and end of large-diameter pipe with portable vacuum-blasting equipment. Better welds were found to result from having the welding surface thoroughly cleaned.



Right: Principal equipment used in vacuum-blasting operations consists of the abrasive separator and pressure-generator unit (left), and dust collector (right); air-abrasive and vacuum hose and two types of blasting guns are shown in the foreground.

New Vacuum-Blasting Tools Aid Welding, Drum Cleaning

Vacuum equipment is combined with an abrasive blast machine in this improved metal-cleaning tool

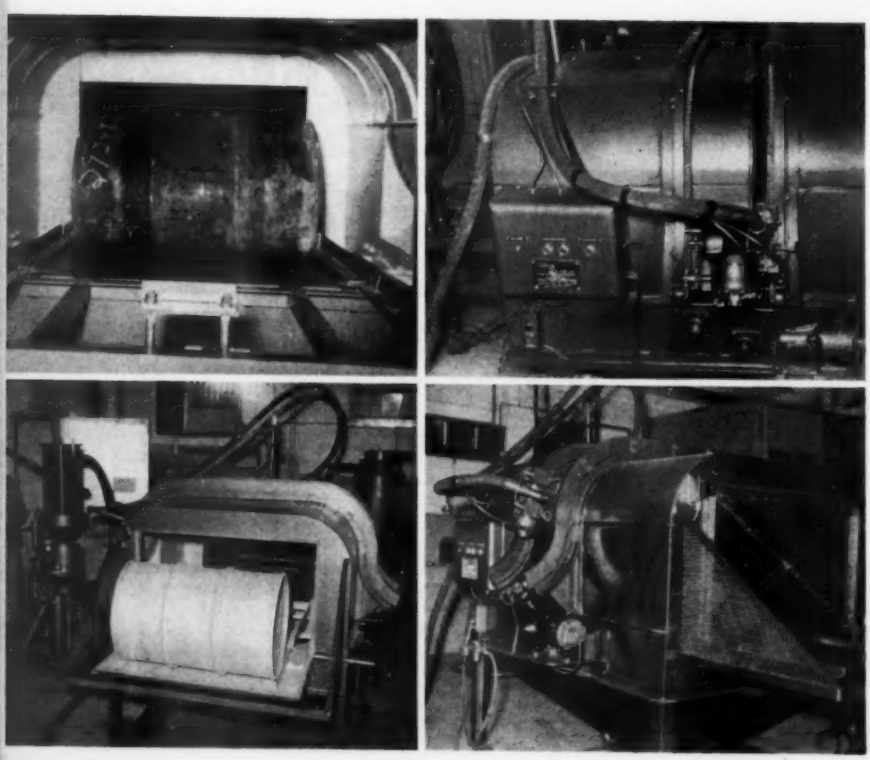
by D. H. Stormont
California District Editor

COMBINING of vacuum equipment with an abrasive blast machine resulted in a new cleaning tool which is finding varied uses in the petroleum industry. Among its newer uses are automatic cleaning of the exterior surface of steel oil drums prior to their being repainted, and as portable equipment for cleaning the ends of pipe prior to welding onto a pipe line.

Still another use is in pipe rolling mills for blasting—on a continuous, automatic basis—the edges of steel plate just prior to its being rolled and welded into pipe. Other routine industry uses of the tool are for removing paint, scale, and rust from any steel surface such as storage tanks, tank cars, structural steel, or any other surface which can be cleaned with sand, shot, or other abrasives.

Known as "Vacu-Blast," the process makes use of special blasting guns, an abrasive separator-generator, and a vacuum pump-dust collector. The gun consists of a blasting nozzle surrounded by a vacuum pickup cone which takes in air about four times as fast as it is expelled from the nozzle. To further confine the abra-

(Continued on page 80)



Four steps in cleaning steel drums in fully automatic abrasive-blast cabinet: (1) Dirty drum positioned in cabinet prior to doors being closed. (2) With the doors closed, the abrasive blast begins at the center of one end of the slowly-revolving drum and traverses upward and along its circumference. (3) Nearing the end of the cleaning operation at the other end of the drum. (4) Cleaning completed, the exit doors drops to permit the drum to roll out of the cabinet. Depending upon the amount of cleaning required, the entire operation is completed in 1 to 4 minutes. A newer model uses two nozzles which travel simultaneously from the ends to the center of the drum. Control features included allow the whole drum to be cleaned, the ends only, or only the chimes.

LOCATIONS OF REFINERIES AND LEVEL OF CONSUMPTION IN VARIOUS REGIONS OF ITALY

Black squares indicate locations of existing refineries, with capacities greater than 5,000 bbl. per day. Black triangles indicate locations of new refineries with capacities in excess of 5,000 bbl. daily.

Expansion Program Doubles Italy's Refining Capacity

by F. Kind*

High coal prices, and relatively low prices for fuel oil and diesel oil, combine to almost double nation's prewar consumption of petroleum products

ANNUAL consumption of petroleum products in Italy was 2,800,000 tons (21,000,000 bbl.) before the war, over 3,000,000 tons (22,500,000 bbl.) in 1948, 4,000,000 tons (30,000,000 bbl.) in 1949, and will be over 5,000,000 (37,500,000 bbl.) in 1950. For 1953 consumption is estimated by OEEC at 6,500,000 tons (48,750,000 bbl.), but it would be no surprise if the actual figure proves to be much higher. The main reason for this great increase in Italy's petroleum consumption is the relatively high price of coal which has to be imported — mainly from northern Europe and Great Britain — and the relatively low price of fuel oil and diesel oil due to the close proximity of the Middle East oil fields. Furthermore, there has been a steady increase in the number of motor cars and trucks and there has been steady progress in the mechanization of agriculture. The consumption of fuel oil is also increasing notwithstanding the substantial production of natural gas since the war. The latter should, in 1951, replace the equivalent of about 500,000 tons (3,300,000 bbl.) of fuel oil.

About one-quarter of Italy's petroleum consumption is concentrated in the province of Lombardy, the capital of which is Milan, the industrial and commercial center of Italy. The cost of transporting petroleum products from the Ligurian ports of Genoa, Savona, and Vado, or from the Adriatic port of Venice (Porto Marghera), is expensive because the products have to be carried by road or rail, no internal waterways being available. Therefore, it seems obvious that erection of a modern refinery near Milan, connected by pipe line with the seaport of Genoa, is of great economic advantage. The refinery should contribute considerably towards reducing the cost of petroleum products in Lombardy and the adjacent provinces. Such a reduction is obviously of great importance to this highly industrial area, as petroleum products are a vital contribution to the energy consumption in Italy.

Concessions Obtained

In 1949, "Condor," S.p.A. per l'Industria Petrolifera e Chimica, was formed by a group of independent Italian industrial and financial interests, together with the Manchester Oil Refinery group of companies. In the last 15 years this latter group has been instrumental in the creation of highly successful independent refineries in Europe. The new company obtained a concession from the Italian Government for the erection of a refinery with a capacity of 1,300,000 tons per annum (30,000 bbl. per day), together with a coastal depot in the port of Genoa and a pipe-line for transporting crude oil from the coastal depot to the refinery. Due to the location of Milan near the Swiss frontier, the new refinery is admirably situated to supplement supplies to Switzerland and about 25-30 per cent of its production is earmarked for export to that country.

Towards the end of 1949, the Condor scheme was approved by OEEC and a 300-acre site at Rho, about 2 miles northwest of Milan, was acquired together with a suitable site at Genoa for the erection of a coastal depot. At Condor's berth in the port of Genoa the largest tankers (up to 32,000 tons) can be unloaded. Arrangements for right-of-way for the 100-mile 12-in. pipe line for the transportation of crude from the coastal depot at Genoa to Rho have also been completed.

The new refinery at Rho will consist of a 30,000-bbl. per day atmos-

*Vice president, S.P.A. per l'Industria Petrolifera e Chemica, Milan, Italy.

pheric distillation plant for the production of a low-boiling, straightrun gasoline, a heavy naphtha cut, kerosine, and two gas-oil streams. A 15,000-20,000-bbl. per day feed-preparation plant which will handle the residue from the atmospheric plant is also being installed. There will also be a 10,000-bbl. per day Thermofor catalytic cracker with an elaborate plant for the recovery, separation, and purification of C_4 and C_3 fractions for the production of liquefied refinery gas. Tail gas, consisting of C_2S and lighter fractions, will be desulfurized and may be used in the Milan gas works. The hydrogen sulphide recovered from the liquid gas and from the tail gas will be converted to sulfur. Flexibility will be achieved by varying the amount of residue from the atmospheric plant and by the possibility of introducing selected distillates from the atmospheric plant into the feed of the T.C.C. unit.

Adequate facilities for chemical treatment of straightrun and catalytically cracked gasoline, white spirit, and kerosine will be provided as well as a TEL blending plant.

Petrocarbon, Ltd., of London and Manchester, is acting as general consultant to the Condor S.p.A. organization.

Storage Tanks

Some time ago orders were placed for the storage tanks in Genoa and at the refinery at Rho. The tanks have a total capacity of about 2,500,000 bbl. About half of these storage tanks are floating-roof type. Delivery of pipes for the 12-in. line—which will be approximately 100 miles long and which has to cross a 1,200-ft-high mountain range above Genoa — is scheduled to be completed early in 1951.

Contract for the design, engineering, and supervision of erection of the distillation, feed-preparation, and catalytic cracking plant (including the ancillary chemical treatment plants, etc.), has been placed with E. B. Badger & Sons Co. of Boston. Arrangements are being made with Socony-Vacuum Oil Co., Inc., for license of the T.C.C. unit. The rest of the equipment, including boiler, power house, interconnecting pipe lines, etc., is now being ordered. The central administrative building at the refinery at Rho is in course of erection and should be completed by early 1951. It is expected that the construction of the tank farm and pipe line will be concluded by the end of 1951 and the refinery is scheduled to start operation in 1952.

Condor, as mentioned above, is a completely independent company and has no ties to any other company producing crude oil or distributing petroleum products. The refinery is designed to handle a large variety of crudes. Although Middle East crudes are the most logical source of supply, the refinery will also be capable of processing many kinds of Venezuelan, Colombian, and United States crude oils. Refinery products will be sold through existing distribution organizations.

Will Relieve Rails, Highways

The Condor refinery and pipe line will take a great load off the Italian road and railway systems, as the transport of the increasing amount of petroleum products to Lombardy would otherwise have to be met by the very expensive construction of additional roads and railway lines. This refinery will be the first in Italy—and one of the first in Europe—to produce very high-octane catalytically cracked gasoline. This will overcome the present difficulty with which the Italian consumers are faced, of having to use gasoline insufficient in octane number. The refinery will also produce high-quality kerosine for which there is a large unsatisfied demand, especially in northern Italy. Condor's large production of C_4 and C_3 should go a long way to satisfy the growing demand for bottled gas for domestic and industrial use, which today is partly met by costly importation from other European sources.

The refinery will also be equipped to produce specialized fuels for gas turbines and for jet engines.

A special feature will be its excellent rail and road loading facilities which should be capable of filling 150 to 200 tank trucks per hour and up to 300 tank cars per day.

Vacuum-Blasting Tools Aid Welding, Drum Cleaning

(Continued from page 78)

sive to the area being cleaned, the nozzle and vacuum cone are housed in a heavy bristle brush.

In operation, the surface to be cleaned is bombarded by abrasive from the blasting nozzle. Resultant refuse and spent abrasive are automatically picked up and returned to the abrasive reclaimer for separation. There the abrasive is separated from dust and other foreign matter and fed into the storage hopper for reuse. Debris, dust, and fine particles of abrasive are carried by vacuum from the separator to the dust collector where they are settled or filtered out so that only clean air is discharged from the unit.

Since there is no flying dust or abrasive involved in the cleaning operation, the hazard of silicosis is completely eliminated. Two other obvious advantages are that the abrasive is reused until it is broken down into fine particles, and that handling of paint or other coating removed is materially simplified. As all dust and abrasive are completely confined within the brush, the clean metal surface can be given a primer coating immediately.

First use of the tool in pipe-line operations was in the construction of the Trans-Arabian pipe line. There eight portable units are used in cleaning the edges and ends of the 30 and 31-in. pipe prior to its being welded onto the line. Since all mill scale, rust, or other accumulations are removed by the blast, better quality welds have been obtained. An additional four units were used for cleaning large H-beams in a specially designed blasting cabinet, and six units were used to clean structural steel before erection.

Adapted in an automatic cleaning cabinet, the Vacu-Blast principle is being used in the Norfolk Naval Yards to remove paint and rust from steel drums at the rate of one drum every 1 to 4 minutes. Depending upon the amount of cleaning required, the drums are being blasted down to the bare metal at a cost of 1.5 to 6 cents per drum.

Operation of Device

As is shown in the accompanying sequence pictures, drums are automatically positioned in the cabinet, the doors closed, the drums cleaned, and then ejected. Controls allow the drum to be rotated at various speeds while the blast nozzle begins at one end, moves up and along the length of the drum, and finishes midway down the diameter of the opposite end. As in the speed of rotation, the time required for each pass of the blast is regulated in accordance with the amount of cleaning required. Spent abrasive and debris drop down into a hopper from where they are removed by suction to the nearby separator.

More recently a new model was developed which employs two ¼ by 6-in. blast nozzles instead of the single ⅜ by 6-in. nozzle used in the cabinet illustrated here. New control features permit these nozzles to be positioned at almost any point on the drum being cleaned. Thus only the ends, the chimes only, or the complete drum may be cleaned at the discretion of the operation. In this newer model the two nozzles travel simultaneously from the ends of the drum to the center of the drum body.

In cleaning the edges of steel plate to be rolled and welded into pipe, the blasting tool is used in continuous, fully automatic operations. Blasting guns, installed as stationary units, blast 1.5-in. strips along the edges of the plates as they move along a conveyor line. Multiple units, three or four on a side, are used where relatively fast speeds are desired on the conveyor. Special guns permit the top, bottom, and both edges of steel plate to be cleaned in one continuous operation.

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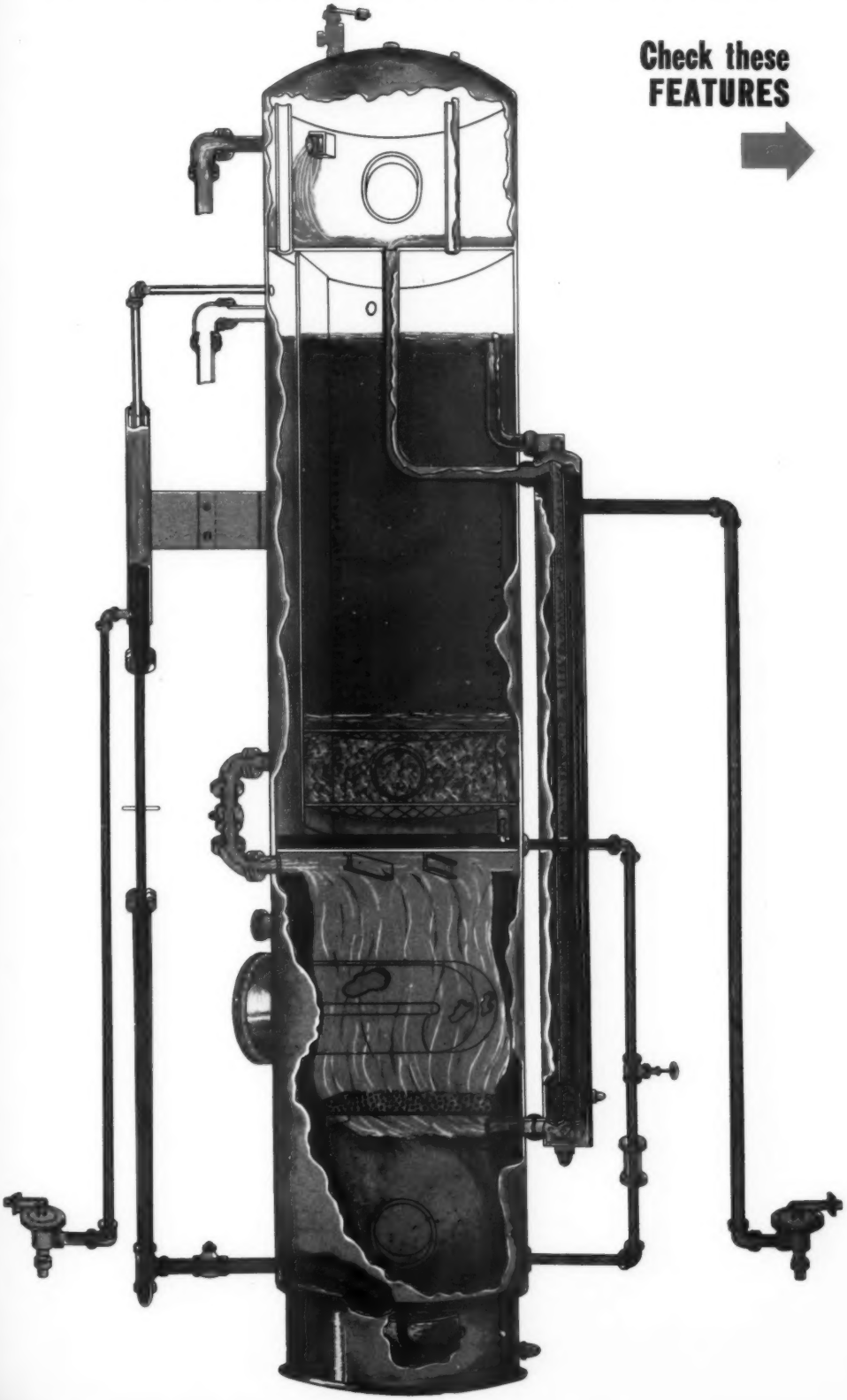

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- LARGER SETTL
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- STABILIZED ST
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stock tank losses.

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without loss of oil
minimizes hot spots.
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- STABILIZED STOCK TANK OIL IS OF HIGHEST GRAVITY ... Gas cycle stabilizes crude. Effective cooling of treated oil prevents stock tank losses.

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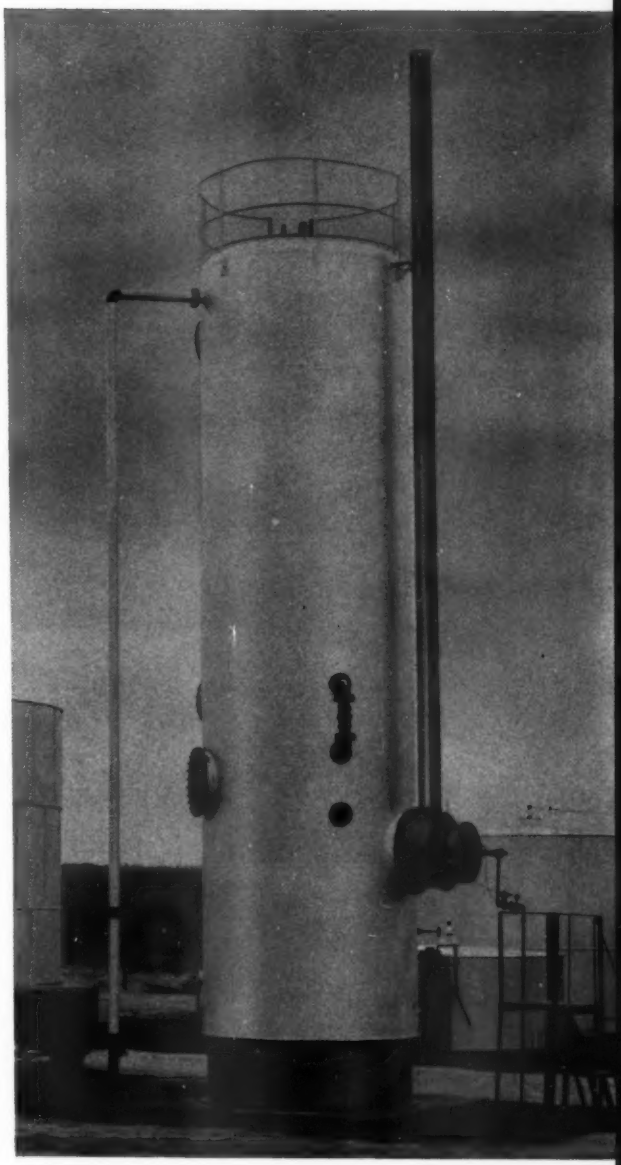

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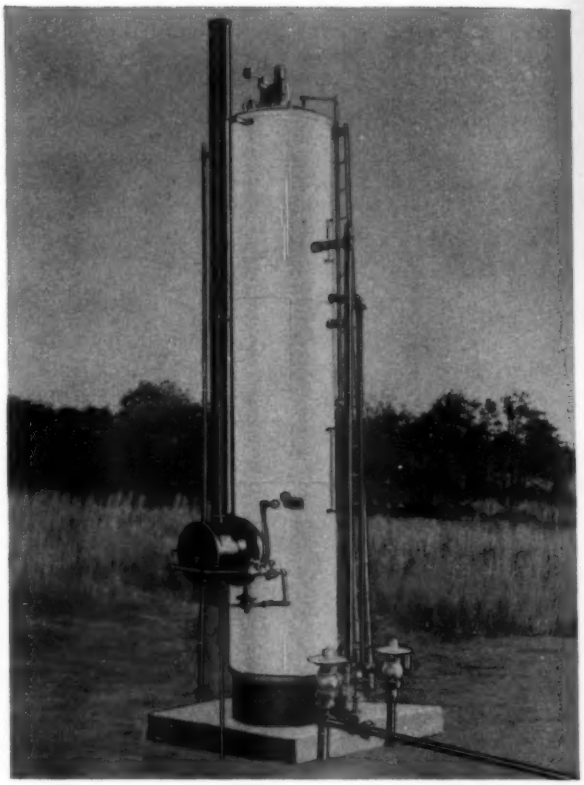
● **Large settling section allows longer settling time . . .** Full shell diameter is used as settling section. Plenty of time is allowed for final separation of oil and water. The result is better separation.

● **Well designed, removable fire box . . .** BS&B baffle type firebox is easy to keep clean for good operation. Firebox is in balance with oil treating capacity.

● **Single adjustable water siphon . . .** Water siphon arrangement is easy to install and regulate. Simple construction makes it easy to understand. Quickly adjusted without piping changes.

● **Filter bed aids in separation . . .** Filter bed aids in final separation of water and oil in the settling section.



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the SCW . . . The BS&B Type SCW Treater is the same as the Type S Treater except for the additions and modifications made for cold weather operation. The orientation of fittings are arranged so that all valves and the water siphon are grouped in one location. Gas outlet connection is located near the base of the treater with an inside riser to the top of the treater.

the JCW . . . An ideal treater for use wherever extremely low gravity stable emulsions call for pre-heating of the well stream.

From a treating standpoint the JCW is structurally the same as the Type J Treater. Modifications include: Protection of all parts against freezing by proper orientation of fittings. Internal water removal system. Additional manway provides for the installation of an optional pre-heater coil.

CAPACITIES and SPECIFICATIONS for BS&B TREATERS

TYPE S	Treater Size			
	4′ x 21′	6′ x 21′	8′ x 21′	10′ x 21′
Oil Treating Capacity, Bbls/day*	100-500	200-1000	400-1800	800-2500
Working pressure, psi	25	25	25	25
Heating Capacity, BTU per hour**	350,000	455,000	650,000	860,000
Approximate Shipping Weight	5,000#	9,800#	12,900#	17,000#

TYPE J	Treater Size			
	4′ x 28′	6′ x 28′	8′ x 28′	10′ x 28′
Oil Treating Capacity, Bbls/day*	100-600	400-1200	600-2400	900-3600
Gas Separating Capacity, Cu. Ft./day	2-3 Million	3-5 Million	5-7 Million	7-12 Million
Working Pressure, psi	25	25	25	25
Heating Capacity, BTU/hour**	420,000	625,000	1,060,000	1,360,000
Approximate Shipping Weight	9,500#	15,500#	19,500#	26,500#

*Oil Treating Capacities depend upon emulsion characteristics, amount of water produced, oil gravity, treating temperature required, etc.

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BEFORE— *Water travel along canal is completely blocked by heavy crop of water hyacinths.*

AFTER— *Just 30 days later the entire crop had been eradicated by 2,4-D treatment.*

2,4-D Eradicates Water Hyacinth

by Edward C. Greco*

COMPLETE eradication of water hyacinth, costly foe of inland navigation in the South Louisiana swamp country, is now being accomplished at relatively little expense with the potent chemical weed killer, 2,4-D.

Water hyacinth, often incorrectly called a water lily, is a perennial, floating, tropical plant, producing a spike of lavender flowers of orchid-like beauty. The plant is a member of the pickerel weed family and is a native of South and Central Americas. Its botanical name is Pontederiaceae Eichhornia Crassiped.

Because of its unique beauty water hyacinth has been transplanted into many countries including the United States. It was first introduced into this country from Venezuela in 1884 by Japanese representatives to the International Cotton Exposition held in New Orleans. Since that time it has spread over Louisiana, Mississippi, Florida, southern Texas, and southern California.

An area of over a quarter of a million acres in Louisiana alone is heavily infested by these plants, which are estimated to cost the State of Louisiana between 65 and 75 million dollars annually. It is destroying good lakes and bayous, converting them to useless swamps by preventing navigation and by forcing commercial fishermen, lumbermen, and the oil and gas companies to excessive expense in conducting their operations.

There have been various methods employed in the past for elimination and control of the plant. Of the methods which have been tried, only mechanical removal can be considered practical, but it has the decided disadvantage of being quite costly.

United Gas Pipe Line Co. owns and operates 32 miles (183 acres) of canals in the marsh lands near the southern coast of Louisiana. These canals are vital links to company properties, there being no means of surface transportation in this low floating-swamp country other than boat or barge.

In order to keep the waterways cleared in the past, the company was forced to spend large sums of money each year to mechanically and manually remove these obnoxious plants. This was accomplished by employing draglines mounted on barges which are equipped with special lily-grab devices. In addition to this, the part-time services of section crews have been necessary throughout the year to eliminate the growth which was produced rapidly by the plants missed in the dragline operation. This type of aquatic plant removal was expensive and not entirely successful.

The chemical weed killer, 2,4-D, is not a poison in the ordinary sense but is a harmone-like material that causes serious disturbances in plants. It is nontoxic to man, animal, or fish life.

Numerous preparations of 2,4-D are now on the market. The three general types are sodium salts, amine salts, and esters. The amine salts are liquid which are quite readily dispersed in water, easily handled, and very effective on water hyacinths and other aquatic plants.

Using a pressure sprayer 2,4-D is applied as a very dilute solution in water. Satisfactory application can be made with a variety of spraying equipment ranging from knapsack type to large-capacity power units. In dense vegetation high gallonage gives much better results due to more complete coverage of the plants by the spray solution. One hundred and fifty gallons of solution per acre gives good coverage.

The first large-scale experiments on eradication of water hyacinths by means of 2,4-D were conducted on a canal 3 miles (7.6 acres) long. This canal had previously been cleared of water hyacinths by means of a dragline employing a lily-grab at a cost of $412.91 per acre. Four months later the plants were spreading at an alarming rate. In addition to the dragline operation, the part-time services of two section crews with pitch forks were employed, at a total cost of $60.59 per acre, in an attempt to maintain the canal open for navigation. Three months later the canal was thoroughly clogged with water hyacinths.

The experimental canal was divided into three separate plots and each was sprayed at a different rate of 2,4-D per acre. The area which was treated with 6 lb. (0.4 per cent) 2,4-D acid equivalent, in 150 gal. water per acre, indicated a remarkable kill. It was estimated that 98 to 99 per cent of the plants had been killed.

One month after initial spraying the canal was again inspected and the number of water hyacinths which survived were counted and compared with counts made before spraying. Original counts indicated 16 plants per square foot or 697,000 plants per acre, as compared to 61 plants per acre after 2,4-D treatment, indicating a 99.9 per cent kill.

Comparative costs of chemical eradication versus mechanical removal show that the chemical method is much less expensive and a great deal more effective. A $437.41 saving per acre, or 92 per cent saving in cost of eradication, was effected by the chemical method.

The maximum effective rate of 2,4-D for water hyacinth is 6 lb. acid equivalent per acre. Eight pounds 2,4-D acid equivalent per acre can be economically and effectively used when alligator weed is present with the water hyacinth.

Technically known as 2,4-Dichlorophen oxyacetic acid, 2,4-D is a very useful tool, but it cannot be used indiscriminately for it is harmful to such plants as cotton, soybeans, and tomatoes, as well as weeds.

*United Gas Pipe Line Co., Shreveport.

Special cuts are produced with this unit, at Skelly's El Dorado, Kans., refinery.

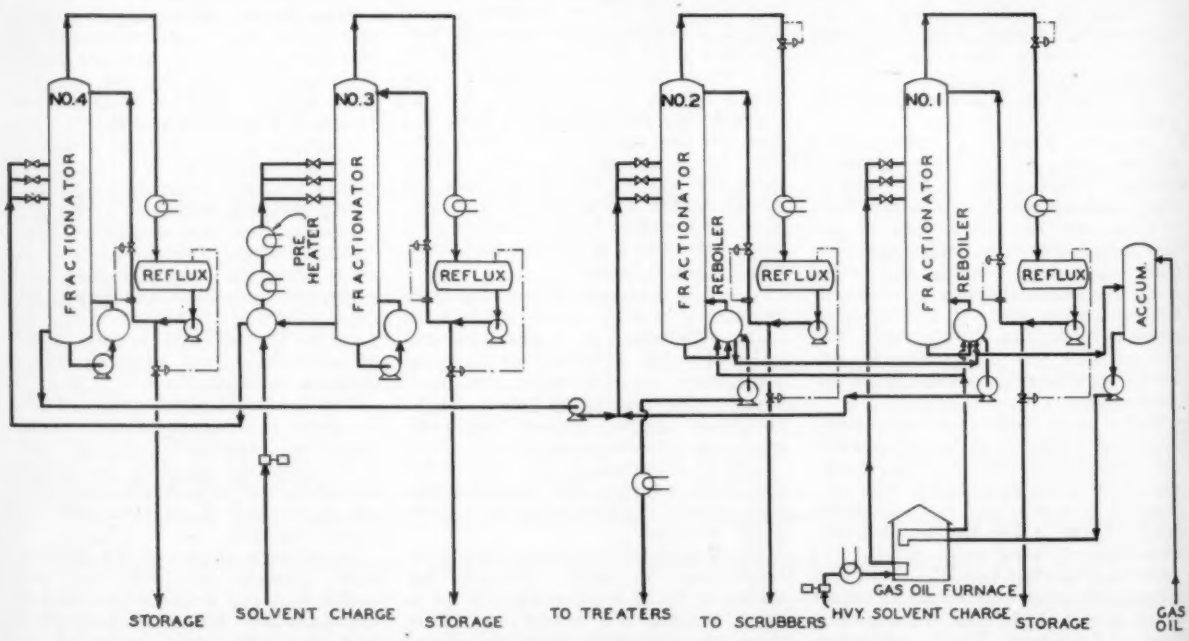
Skelly Manufactures Close-Boiling Products at El Dorado Plant

SKELLY OIL CO. recently has installed new equipment at its El Dorado, Kans., refinery to fractionate straightrun gasoline and other light stocks into special products. Two types of stock, both from Kansas crudes, are processed in the superfractionating unit. One of them is called heavy solvent, and the other is termed light solvent.

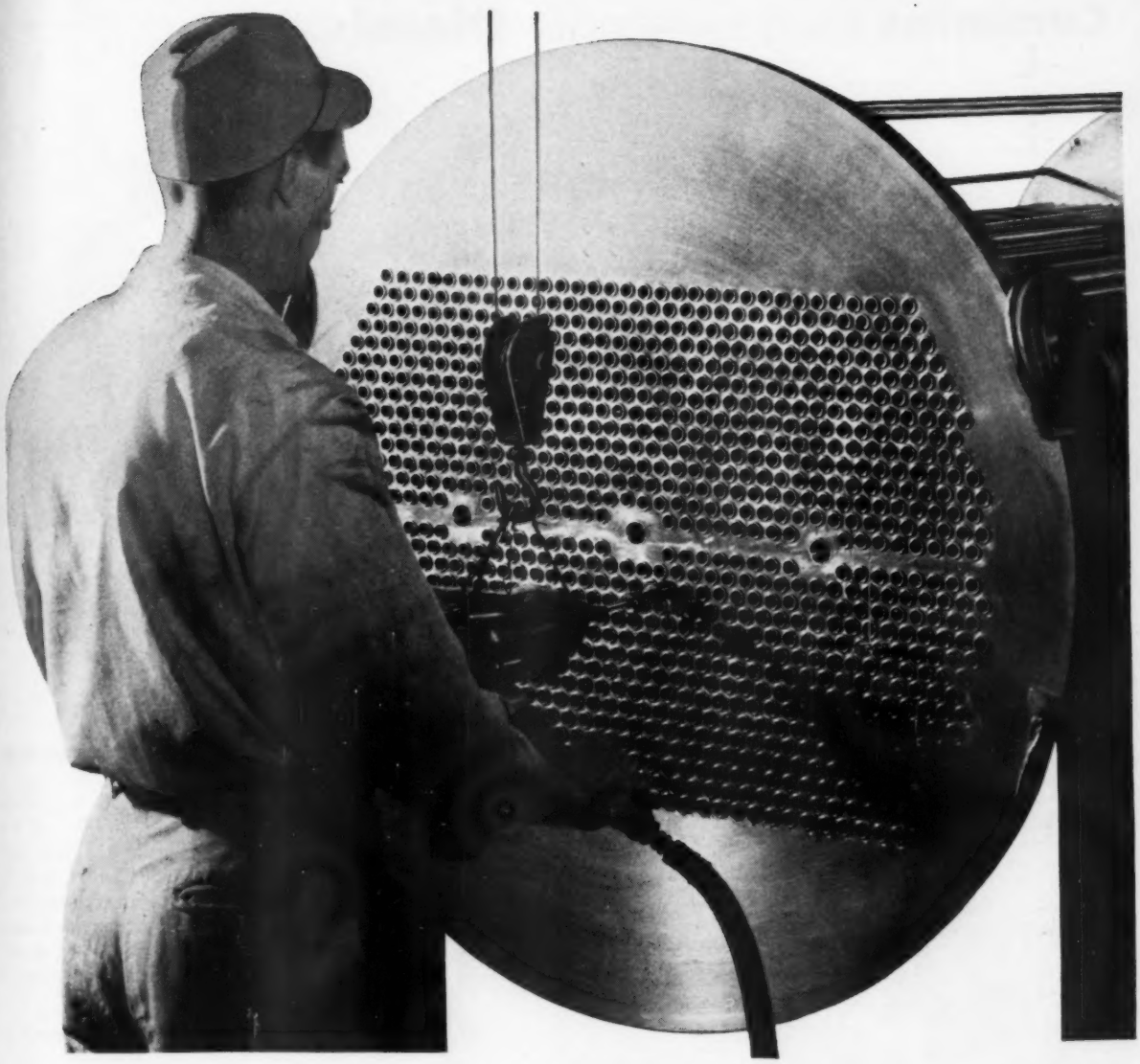
The heavy-solvent charge has an Engler distillation range of from 280° F. i.b.p. to 400° F. e.p. The light-solvent feed has a distillation range from 111° F. i.b.p. to 316° F. e.p. Boiling range of the special products from the superfractionating unit are limited only by charge composition.

By varying pressure and temperature conditions and combining streams from any two columns to the third tower, several products within the limits of the feeds may be produced. Short-boiling-range materials are manufactured without difficulty. As for example, a product with an almost straight-line boiling range is produced easily. This material has an initial boiling point of 147° F., and an end point of 155° F., a spread of only 8° F.

The superfractionating unit is comprised of four fractionating columns which are designated Nos. 1 to 4. Column No. 1 is commonly operated on the heavy-solvent stock, although any other type of stock may be used. The charge is obtained from storage at a normal rate of 1,200 bbl. per day. The stream is sent through two interchangers in series against the flow of hot bottoms from column No. 2, where reboiler temperature is maintained at approximately 390° F. From the interchangers, the feed material flows through a fired heater



Flow arrangement of the four-column fractionator which produces special solvents of narrow boiling ranges.



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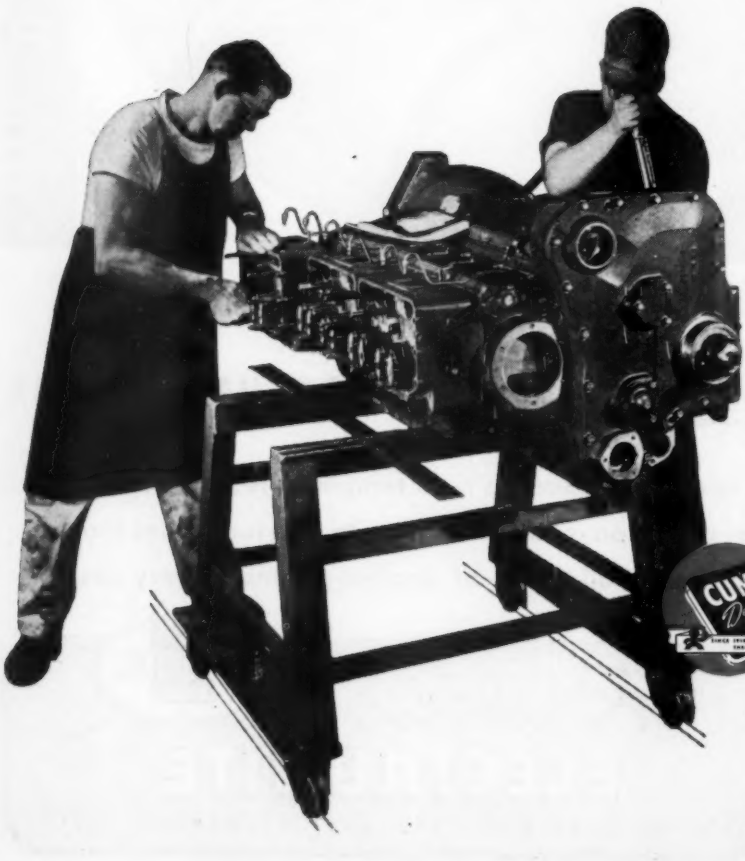

Typical of the extra care that goes into the building of *every* rugged, dependable Diesel is the tear-down of the engine after assembly. First the engine is run in on the test block. Then it is completely torn down and carefully re-inspected. After that it is re-assembled and tested *again*.

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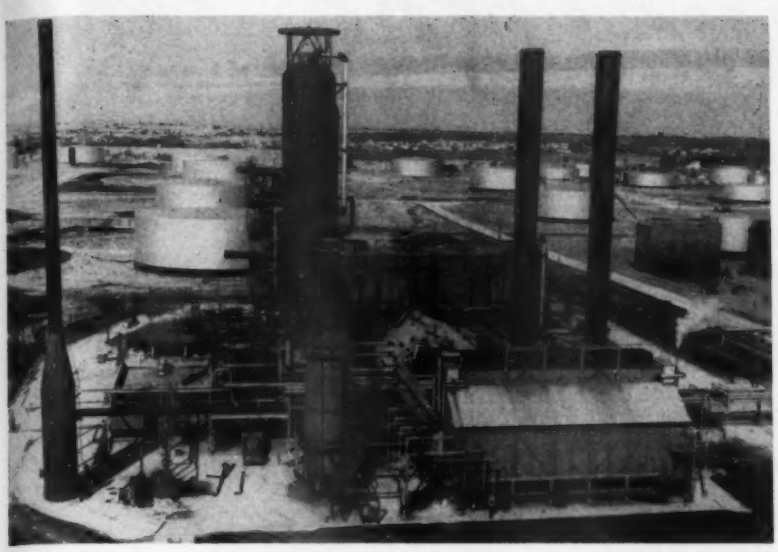

This crude-oil distillation unit at Skelly's El Dorado refinery is rated at 35,000 bbl. daily.

coil and thence to column No. 1. This column, 4 ft. in diameter and 76 ft. high, contains 36 bubble plates. The heated charging material enters the tower at either of three points, the fifteenth, eighteenth, or twenty-first plates, depending on conditions. The plates are numbered from top to bottom of the column.

The reboiler for column No. 1 is heated with a stream of circulating gas oil. Heat from the circulated gas oil is used in other sections of the unit. The reboiler is held at 410° F. Pressure in No. 1 column is held to 197 psig. and its top temperature is maintained at 322° F. by refluxing 380 bbl. per day of overhead condensate. Temperature of the reflux is 118° F., obtained by water cooling.

Bottoms from No. 1 column are pumped directly to column No. 2. This tower, 5 ft. i.d. and 109 ft. 2 in. high, contains 50 bubble plates. The charge from No. 1 tower reboiler enters No. 2 column at either of three plates, Nos. 22, 25, or 28. These plates are also numbered from top to bottom of the tower. Pressure on the top of the column is held at 5.5 psig. and the overhead temperature maintained at 332° F. with reflux consisting of overhead condensate. The top stream has a range from 297° F. i.b.p. to 310° F. e.p. and is marketed as a heavy solvent. A set of two water-cooled condensers, in series, cools the product to a temperature of 90° F. before its delivery to storage.

The charge to column No. 3 is pumped, at a rate of 2,500 bbl. per day, through two interchangers, one handling bottoms from No. 3, and the other the hot bottoms from column No. 2. From these interchangers, the material passes through a fired charge heater directly to the column. The heated charge enters at plates Nos. 11, 15, or 19. These plates are numbered from bottom to top of the tower. The column is equipped with 30 bubble plates, and has an inside diameter of 6 ft. 6 in., and a total height of 91 ft. Overhead is produced with a reflux volume of 3,000 bbl. per day. Bottoms are recirculated through a fired reboiler similar in design to the fired preheater.

Bottoms material from No. 3 column is transferred under pressure, normally held on the column at 25 psig., directly to column No. 4. This column has a diameter of 5 ft., a total height of 93 ft. 4 in., and contains 32 bubble plates. The charge may enter on either of three plates, Nos. 9, 11, or 15, numbered from bottom to top. Bottoms are heated with a fired reboiler to obtain a temperature of 268° F., so that the bottom of the tower will be held at 265° F. The pressure on the column is maintained at 3 psig. to yield a product having a boiling range from 147° F. i.b.p. to an end point of 155° F.

This plant has builtin flexibility so that practically any charge may be used to yield the desired product since the towers are so arranged that bottoms from any one of the columns may be used as charge stock on columns Nos. 2 and 4.

Britain Gets "Sootless" Carbon-Black Plant

(Continued from page 76)

izing, and drying equipment at the Stanlow plant is stainless steel. The dry precipitator and cyclone shells are welded wrought iron.

A new building houses the quality-control testing laboratories, offices, and lunch room. In the chemical laboratory the carbon black undergoes a series of analytical tests, while in the physical section laboratory samples of the material are regularly tested in rubber compounds. The complete laboratories of Godfrey L. Cabot, Inc., in America are always available for any work beyond the scope of the local facilities.

Ample facilities are available for the workers. On arrival they deposit their clothes in one locker in the "clean" room and pass through into a second room where they don the working clothes provided by the company. At the end of the shift they leave their working outfit in a second locker, have a bath, return to the clean room and put on their own clothes again. A laundry for the work clothes is also provided.

Up to the present, Britain's carbon black requirements had to be met by imports, mostly from the United States and costing dollars. United Kingdom imports of carbon black totaled 43,741 tons valued at £2,700,000 in 1948, and 29,112 tons worth £1,982,000 last year. During the first half of 1950 they rose to 25,465 tons costing £2,107,000. The Cabot Stanlow carbon-black plant is expected to save Britain over a million dollars each year. It occupies only 8 acres of the 20-acre site. But the whole installation has been designed to allow for the building of further units, which could be achieved with relatively small increase in all ancillary services.

Construction of the plant was started in mid-1949. Credit for the completion of the plant in just over a year, instead of in February 1951 as originally planned, largely goes to the general contractors Simon-Carves, Ltd., of Stockport, and to their many suppliers and subcontractors. Approximately 90 per cent of the plant was supplied by British firms, the remainder came from the United States. The cost of the plant is of the order of £500,000. George H. Cash, senior engineer employed by the parent company in America, was directly responsible for the supervision and construction of the Stanlow carbon-black manufacturing unit.

The parent firm is one of the pioneers in the commercial development of "oil blacks" (derived from liquid-hydrocarbon material). Its commercial brand of high-abrasion furnace black (HAF), "Vulcan 3," is being produced at Stanlow.

BOOKS

OIL FOR THE WORLD. By Stewart Schackne and N. D'Arcy Drake. Published by Harper & Brothers, 49 East Thirty-Third Street, New York. 128 pp. $2.50.

This is a brief introduction to the subject of oil written for the general reader and is generously illustrated with maps, charts, and photographs. It reviews the significance of petroleum and petroleum products to human welfare and world economy, and gives the essential information about how oil is found, how wells are drilled, how the crude is transported and refined, and how the products are distributed and marketed. Although the phases of the petroleum industry are highly technical, this book makes them familiar and easy to approach so that the work of the "rock hound" or the driller, the function of the "go-devil" in a pipe line, or of the fluid catalyst in a "cat cracker" are all understood. There is information about the important oil-bearing regions of the world and how this vital natural resource is being made available.

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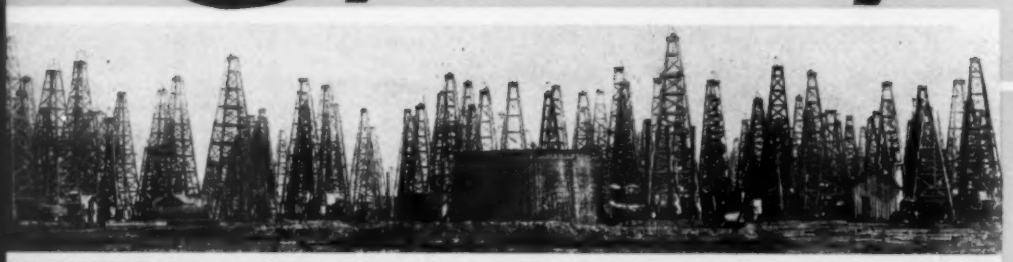

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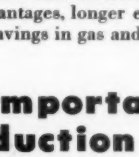

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How to Test Operating Efficiency Of a Natural-Gasoline Plant

by J. B. Armstrong

This paper is limited to a discussion of tests to determine the over-all operating efficiency of the absorption section of a natural-gasoline plant, as applied to extraction of L.P.G. and gasoline. The gasoline-plant extraction-efficiency test consists of several phases:

1. Preparation for the test.

2. Accumulation of operating data and samples for analysis during a period of steady operation.

3. Analysis of the results to show accuracy of the data and reliability of the test. This is accomplished by gas and materials balances and by comparison of the test data with design or previous operating data.

4. Determination of extraction efficiencies, product losses, and inefficient and costly operations.

5. Recommendation of corrective measures necessary to obtain more efficient plant operations.

The author is with Standard Oil Co. of California, gasoline department. **Paper presented at California Natural Gasoline Association meeting, Los Angeles.**

A GOOD natural-gasoline plant efficiency test has many important applications. It can be employed as a means of evaluating operations of a new absorption plant to determine if the plant as a unit will meet specifications for extraction set forth in the builder's contract. It can be utilized as an aid to establish means of increasing efficiency of operating plants or to determine results obtained, after modification of existing plants. However, the most important use for the test is as a tool periodically to follow plant operations through years of steady production to eliminate operating inefficiencies and costly maintenance jobs.

Properly conducted, this test can be employed to gage the necessary intervals between maintenance shutdowns and to indicate the probable time of replacement of inefficient equipment. It can be used as an aid for anticipating operating and plant-maintenance costs.

Most companies do conduct an efficiency test of some sort at frequent intervals. Usually, these are spot checks on plant streams to control absorption losses, or efficiency tests on separate units within the plant; and do not include an accumulation of data and analyses to determine over-all efficiencies. It is believed that the complete test should be conducted on every gasoline plant at 12 to 18-month intervals and that sufficient savings to warrant these periodic tests can be realized.

Preparation for Test

Preliminary work in getting ready for a plant test is just as important as are the accurate data and analyses taken during the test. Poor and inaccurate data often are a result of poor preparation.

The first step for an over-all plant test is to make the flow chart up to date. All flow lines, including those which may be used only under abnormal conditions; bypass lines; flow controllers and meters; and all equipment pertinent to the gasoline absorption process should be indicated. The chart need not be an elaborate piping drawing. A schematic layout which should be maintained continually for every gasoline plant is suitable. If a flow diagram does not exist, it is recommended that one be drawn up before the plant test is conducted.

The flow chart is checked for correctness by actual inspection of the plant lines and a careful study of the plant cycle is made. Sometimes this may reveal minor changes in the plant, which would effect increased operating efficiency. This is particularly true of plants where incorporation of modern design ideas will increase retention or in plants where many changes have been recently made and the plant cycle is not in the best order. This refers mainly to the disposition of plant vapor and condensate streams. Any obvious improvements within the plant should be recommended and, if possible, these changes should be made before the plant test is conducted.

Contact with field personnel.—When making plans for a plant test, field personnel should be contacted and notified of the plans. Sometimes it is best to set a date for the test that is mutually agreeable between both plant and field operators. Request the field operators to maintain, as nearly as possible, an average and steady gas load intake to the plant and to report any upset conditions that cannot otherwise be controlled for the period preceding and during the test. Field operators are quite willing to cooperate in every way they can, and this contact normally assures a much better condition for the plant test.

From the flow chart, it is possible to determine what samples and operating data will be taken during the test. At the time the chart is checked for correctness, sampling locations, thermometer wells, pressure-gage connections, and metering facilities should be noted. The first time that a test is run or after modification of the plant, there are always additional connections and thermometer wells that will be required during the test. It is best to request installation of these considerably ahead of any test date to give the plant maintenance crew time to get the work done.

For an over-all plant-efficiency test, samples are required for analysis on all plant intakes, products, and discharge streams, including any rectifier residue or plant vapors to the plant fuel system. Recommended also is the taking of samples of any intraplant streams that may indicate operating efficiency. These normally include absorber intakes, recycle vapor streams, and rectifier reflux streams. In addition, if the efficiency of any individual unit is to be determined concurrently, samples will be required around this unit. All samples are taken in accordance with standard sampling procedure. Analysis of the samples of the products and plant discharge gases are determined by fractional distillation. Analysis of the intakes and other plant streams can be determined by fractional distillation or by the charcoal enrichment test.

On low-pressure and vacuum streams, sufficient volume of sample cannot be obtained in regular sample containers to conduct a charcoal test on a composite 24-hour sample. If these analyses are to be determined by the charcoal method, the tests must be run from spot line samples during the plant test period. In this case, analyses should be taken on the intakes at times of maximum, minimum, and average enrichments, and the average of all three is used for the plant materials balance.

Sample containers should be set in

PLANT TEST DATA

Intakes—	Meter No.	Gas vol. M.c.f./day	Condensate (gal. per day) Gasoline	Condensate (gal. per day) Water	Pressure (psig.) Average	Pressure (psig.) Variation	Temperature (°F.) Average	Temperature (°F.) Variation	Water content M.c.f./day	Enrichment Test	Enrichment G.p.m.
High-pressure field	241	20,800	....	....	440	432-451	103	86-125	66	Charc.	0.84-0.53
Reduced high-pressure field	242	22,260	....	....	131	124-137	95	72-123	131	Charc.	1.01-0.58
Low-pressure field	243	2,936	....	....	7.5	5.8-9.1	84	67-109	78	Charc.	1.60-1.21
Total		45,996							275		

Plant discharge—	Meter No.	Gas vol. M.c.f./day	Pressure (psig.) Average	Pressure (psig.) Variation	Temperature (°F.) Average	Temperature (°F.) Variation	Water content M.c.f./day	Enrichment Test	Enrichment G.p.m.
Gas lift	215	11,934	441	432-451	...	}			
Gas lift	251	5,163	427½	420-432	96	85-112 }	10	Charc.	0.91-0.51
Absorber discharge		26,900	423	415-428	89	82-106	37	Fract.	IC_4+ .086% IC_4 .063%
Rectifier residue		316	278	275-279	112	None	2	Fract.	IC_4+ .22% IC_4 .05%
Total		44,313					49		

Products—	Volume (gal.per day)	Spec. R.v.p.	Sp. gr.	Extraction (g.p.m.)	Weath. test. residue	Calc. equiv. gas. volume	Fract.-liq. (%)
Rect. gasoline	26,869	29.7	.....	.93	.....	.....	C_3 .39
							IC_4 12.83
							NC_4 28.10
							C_5+ 58.68

Gas balance intakes—	M.c.f. per day Volume	M.c.f. per day Water content	Plant discharge	M.c.f per day Volume	M.c.f per day Water content	Products	Equiv. volume products M.c.f. per day
High-pressure field	20,800	66	Gas lift 215	11,934 }			
Reduced high-pressure field	22,260	131	Gas lift 251	5,163 }	10	Rect. gaso.	721
Low-pressure field	2,936	78	Absorber discharge	26,900	32		...
	.....	...	Rect. residue	316	2		...
Total	45,996	275		44,313	49		721

Gas balance: Water-free basis
Intakes 45,721 M.c.f. per day
Discharge and products 44,985 M.c.f. per day
Difference 736 M.c.f. per day
1.64 per cent
Dry gas ratio: Discharge gas volume/ intake gas volume = 0.892764 per cent

Materials balance intakes—	Isobutane plus Volume	Isobutane plus Gal./min.	Factor	Isobutane plus Gal./day	Discharge and products	G.p.m. or per cent Volume	Factor	Isobutane plus gal./day
High-pressure field	20,800	0.84	.97	16,910	Gas lift	17,097	†0.91	.96	14,922
					Abs. dischg.	26,900	*0.86	...	780
Reduced high-pressure field	22,260	1.01	.963	21,600	Rect. res.	316	*0.22	...	24
					Gasoline	26,897	*99.61	...	26,764
Low-pressure field	2,936	1.60	.996	4,680		.....	....	...	.....
Total				43,190					42,470

*Per cent. †Gallons per minute.

Intakes 43,190 Gal. discharge and products 42,470 Gal. difference 720 Gal. 1.67 per cent

Product—	Isobutane Extraction efficiency % IC_4	Isobutane Extraction efficiency Volume	Isobutane gal./day	Equiv. volume isobutane M.c.f./day	Discharge	Volume M.c.f./day	Isobutane (%)	Isobutane M.c.f./day
Gasoline	12.83	26,869	3,447	105.42	Absorber dischg.	26,900	.063	16.95
					Rect. residue	316	.05	.16
Total				105.42				17.11

$$\frac{\text{Isobutane in products 105.42 M.c.f. per day}}{\text{Isobutane products and discharge 105.42 + 17.11 M.c.f. per day}} \times 100 = 86.1 \text{ per cent isobutane extraction efficiency}$$

Remarks: Plant potential-isobutane 4,010 gal. per day (105.42 M.c.f. per day)
Isobutane loss in discharge gases 553 gal. per day (17.11 M.c.f. per day)

Plant accumulator data—	Gas volume M.c.f./day	Condensate, gal./day Gasoline	Condensate, gal./day Water	Pressure, psig. Average	Pressure, psig. Variation	Temperature, °F. Average	Temperature, °F. Variation
Boosted low-pressure field	....	1,700	.....	82	78-85	79	70-87
Boosted reduced high-pressure field	....	No. 1 Neg.	.....	...	...	...	...
	....	No. 2 2,900	.....	447	442-451	82	74-89
Mix tank	....	....	.....	100	.....	83	....
High-pressure vapors	575	11,700	.....	435	427-446	76	67-90
Gasoline-water sep.	....	18,000	.....	28	28-28½	77	69-83

SUMMARY SHEET

Absorber data:	Average	Variation
Number	1	
Type	Bubble cap	
Number of plates	24	
Service	High-pressure field	
Pressure, psig:		
Gas in	...	.....
Gas out	423	415-428
Gas volume, M.c.f. per day:		
In	.....	.....
Out	26,900	.....
Gas temperature, °F.:		
In	97	86-112
Out	89	82-106
Oil Circulation:		
Gallons per minute	290	.....
Gallons per M.c.f.	14.3	.....
Lean-oil factor	18.5	.....
Oil temperature, °F.:		
In	79	74-86
Out	105	96-117
Shrinkage, per cent	7.8	.....
Isobutane abs. factor	0.98	.....

Stripper data:		
Number	1	
Type	Bubble cap	
Number of plates	30	
Pressure, psig.	32½	32-32½
Oil circulation:		
Gallons per minute	290	.....
Thousand gallons per day	417	.....
Steam pressure:		
Psig.	34½	.....
Volume, lb. per day	75,800	.....
Pounds per 1,000 gal. oil	182	.....
Temperature, °F.:		
Oil in	358	None
Top	204	201½-205
Bottom	344	342-346
Stripping factor	1.75	.....
Lean-oil gravity	36.3	.....
V.p. mm. H_2O at 100° F.	33	.....
Reflux:		
Gallons per day	57,300	.....
Ratio	1.6:1	.....
Calc. L.O.V.P., gallons per day	178	.....
Actual lean-oil loss, gallons per day	278	.....

Rectifier data:		
Number	1	
Type	Bubble cap	
Number of plates	24	
Control plate	..	
Pressure, psig.	285	.....
Temperature, °F.:		
Feed	206	.....
Control	141	.....
Top	...	.....
Reboiler	299	.....
Feed rate, gallons per day	36,500	.....
Reflux:		
Gallons per day	42,000	.....
Ratio	1.15	.....
Temperature, °F.	112	.....
Weath. test residue, per cent	0.54 IC_4+	.....
Volume residue vapors	316	.....
Disposition of vapors	Boiler fuel	.....
Top liquid product	None	.....
Volume, gallons per day	...	.....

Cold oil vent tanks:	
Number	1
Temperature, °F.	103
Pressure, psig.	185
Residue vapors, M.c.f. per day	665
Disposition of vapors	To boosted L.P. Int.

Heat exchangers:		
Arrangement	Parallel	
Temperature, °F.	1	2
Lean oil:		
To	337	343
From	159	165
Degrees drop	178	178
Rich oil:		
To	103	103
From	271	267
Degrees pickup	168	164
Pressures, psig.:		
Lean oil:		
To	26	32
From	16	16½
Pressure drop	10	15½
Rich oil:		
To	153	181
From	103	115
Pressure drop	50	66
Calc. lean-oil heat load, B.t.u. per hour		12,100,000
Calc. rich-oil heat load, B.t.u. per hour		.....
Heat loss in lean-oil coil, B.t.u. per hour		3,565,000

Hot-oil vent tanks:		
Number	1	2
Temperature, °F.	271	267
Pressures, psig.	101	115
Disposition of vapors	To H.P. vapors	

Preheaters:		
Arrangement	Parallel	
Temperature, °F.:		
Oil to	271	267
Oil from	358	358
Pressure, psig.:		
Oil to	54	60
Oil from	37	38
Pressure drop, psi.	17	22
Steam pressure:		
Psig.	184	184
Temperature, °F.	375	375
Heat pickup, °F.	87	91
Approach to steam, °F.	17	17

Rect. heat exchangers:	Temp., °F.	Press., psig.
Feed:		
To	83	292
From	206	290
Temp. rise-pressure drop	123	2
Product:		
To	306	285
From	134	282
Temp. rise-pressure drop	162	3
Heat transfer, B.t.u. per hour	...	...

Cooling conditions:	Average	Variation
Wet bulb temperature, °F.	58	52-63
Day bulb temperature, °F.	72	62-83
Wind velocity, m.p.h.	3-5	.....
Tower	Process	
Volume spray water, g.p.m.	3,860	.....
Volume spray per section:		
Spray temperature, °F.	80	72-85
Basin temperature, °F.	91½	.....

Cooling coils:	Temperature, °F. Hot	Cold	Spray	Approach to wb.
L. P. gas	212	92	85	34
H. P. gas	248	88	78.5	20.5
L. P. vapors	148	88	74	20.5
H. P. vapors	184	86	83.5	28
Stripper vapors	201	92	83	34
Lean oil	161	77	72	19

place well ahead of the test. Large L.P.G. cylinders are used for gas samples. Duplicate samples are taken, if possible, to limit the possibility of losing a sample. Cylinders should be steamed and evacuated, then checked for leaks before being used. Cylinders are hooked up to sampling connections with a short header to prevent danger of condensation in the header system. Each header is equipped with a pressure gage for determining cylinder pressures during sampling. The header is flushed out with gas and then left connected to the sample line during the entire test. A shipping tag is attached to each container showing the time of sampling, the cylinder pressure for each increment of sample, and other pertinent data regarding the sample. The tag is then initialed after each sample increment is taken.

If possible, the cylinders should be placed in a shaded area for protection from changing atmospheric conditions. Heat from direct sun rays will cause changes in pressure on the sample containers between increments and may result in nonuniform samples being taken.

Liquid sample containers are hooked up in the same manner. All liquid samples are taken by water displacement and a measuring cup, to gage the drawoff for each sample increment, should be placed with the bomb at each sample point.

Drips that come into the plant with the intakes and are accumulated in the intake scrubbers, or that are collected through a separate gathering system, must be gaged and sampled during the test.

Orifice meters.—All orifice meters used for measuring plant stream volumes must be cleaned, calibrated, and checked prior to the plant test. Static readings on all meters must be checked against a test gage on the line. New gravity and temperature factors are obtained and meter coefficients are recomputed, if necessary, based on the new data. Orifice plates must be checked to determine if the size is correct and within the recommended range for accurate readings. If there is any question as to the size and condition of the orifice plates, they should be pulled and inspected. There is a possibility that the plate may be fouled or corroded, or that sand, line scale, or other matter may have accumulated behind the plate, resulting in a wrong reading.

Experience has shown that failure to check meters and plates thoroughly has resulted in some unsatisfactory plant tests. If one reading is incorrect, the plant materials balance will not check and the final results are questionable. Always question any plant measurement before the test and more likely good test results will be obtained.

Pressure gages, thermometers, recording and controlling instruments and the like are calibrated against standard instruments prior to the test. A separate gage or thermometer should be placed at every location where readings will be taken to avoid moving these instruments during the test. Check that all thermometer wells extend into the flow streams and give accurate readings. Be sure all gage cocks and thermometer wells are not plugged. All flow-controlling equipment must be inspected to make certain that it is operating properly. Bypass valves should be inspected to be sure they are correctly open or closed.

Plant test work sheet.—Data readings and samples are taken every 4 hours during a plant test. For ease and speed in taking the data, a test work sheet is prepared. Each reading, sample, or other item required during the test is listed in the order in which it will be taken on each successive round of the plant. The work sheet is built by making an inspection of the plant, recording each point at which data will be required in the order in which they are reached.

The work sheet has one column for each set of data per inspection circuit. This enables the readings to be taken in the same order each time. It eliminates jumping around on a data sheet, hunting the line on which some reading is to be recorded. It prevents missing data and it makes the readings much quicker and easier to obtain. The time of starting and completing each round of the plant is recorded.

After the preparation for the test is completed, one inspection of the plant is made, taking all data readings and checking sample containers to be sure everything is satisfactory. When making plans for the plant test, schedule the work so as to allow plenty of time both for preparation and during the test to complete everything required. Allow time to take care of unforeseen difficulties. Don't schedule too much work for the day of the test. It is better to get the essential data accurately than to plan too much and not be able to complete it.

Plant Test

Normally, the plant test is conducted over a 24-hour period, from gaging time one morning to the same time next morning. Shorter tests are not recommended because variations in atmospheric conditions and intake enrichments, which cannot be controlled, might give erroneous results. At the start of the test, gages are taken on all gasoline, L.P.G., and lean-oil storage. If products are shipped by meter, these readings are also taken. Levels in all plant accumulators and surge tanks must be marked. It is recommended that the plant operators be requested to maintain these levels as nearly as possible at the same point during the test. At the end of the test, corrections must be made in the materials balance to account for any change in volumes in the condensates in accumulators.

After the morning gage has been made, the first round of data is taken. When a complete set of data is obtained, the work sheet is studied and any data which appear to be out of line should be rechecked immediately.

During the test, it is necessary to gage the rate of condensate, both gasoline and water, in the various plant accumulators. This normally requires shutting in the vessel and gaging the rise of condensate over a period of time. It is not necessary to gage these accumulators every time data is taken during the test, but it should be done at previously estimated times of maximum, minimum, and average rates.

At the end of the test period, final gages are taken on all storage tanks and accumulators. Any changes in volume of condensate in the plant accumulators must be determined. Sample containers are disconnected and checked for leaky valves. Analyses are determined as time permits. All recording charts are accumulated and kept with other plant test data for reference.

Plant test data summary sheet.—A summary of all test data is recorded on a data summary sheet. The first section of the sheet summarizes all data necessary to compute the gas and materials balances and the over-all isobutane - extraction efficiency. The remainder of the sheet summarizes all operating data.

All volumes entered are corrected to 60° F., and where these readings are obtainable from 24-hour recording charts or gages, they are utilized. The average of all readings and the variation in these readings during the test are recorded under operating data.

The plant gas balance can be computed prior to the receipt of sample analyses to indicate the reliability of the test data. This is computed on a water-free basis, assuming saturated gas streams at all points. The gas balance compares the total of the plant intake volumes with the sum of the plant discharge-gas volumes and the gas-equivalent volume of the products. This balance should normally check within 3 per cent. This deviation is due to inaccuracy of measurements. Any greater deviation indicates erroneous measurements or losses within the plant.

An over-all plant materials balance is computed after all sample analyses have been obtained. If fractional analyses have been determined on all samples, this materials balance is made for each component of the gas. If charcoal enrichment tests have been run on the plant intake samples, the balance is computed on the iso-

butane plus fraction only. For greater accuracy in this case, a small correction factor is applied to the charcoal test result to indicate isobutane plus only. The materials balance should check favorably with the preceding gas balance. Any large deviation between the two indicates incorrect analyses or that measurements, particularly of the products, may be in error.

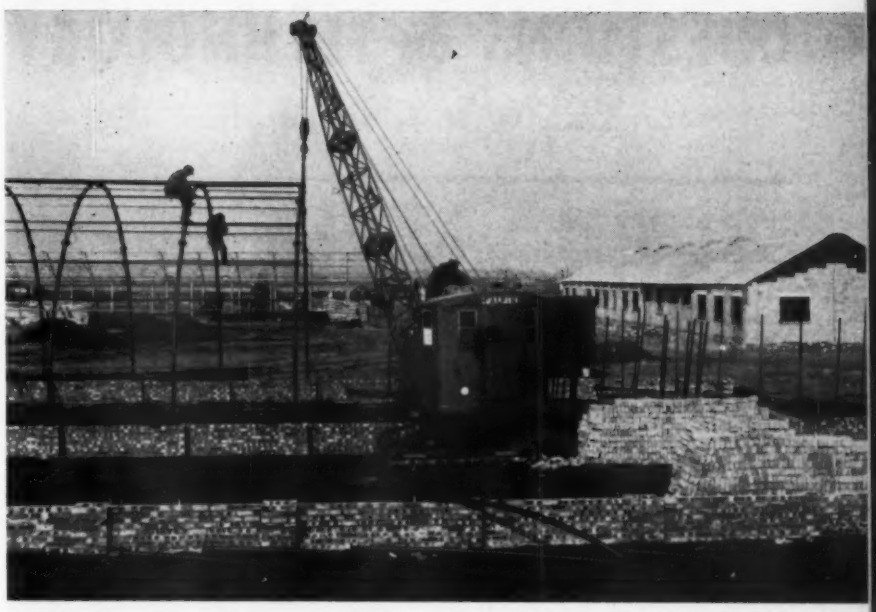
The plant potential and the over-all extraction efficiency can now be computed for any component: propane, isobutane, or for any desired R.v.p. gasoline. For these calculations, the analyses of the discharge gases and products are used because these data are normally more accurate than the plant intake data. The potential for any component is the total volume of that component available for extraction in the plant. The potential is determined by computing the total volume of the desired component in the discharge gases and the products.

Over-all extraction efficiency for any component is then indicated by the ratio of the actual production to the plant potential. This is determined by dividing the volume of the desired component in the products by the total volume of the component in the products and discharge gases.

The accompanying data sheet shows some of the plant operating data from a recent test. During this test, a gas balance was obtained with a difference between intakes and discharge streams of only 1.64 per cent. The materials balance for isobutane plus showed a difference of 1.67 per cent. This is an excellent check and indicates that the volumes and analyses, as determined for the test, are accurate. From these data, then, an isobutane potential of 4,010 gal. per day is shown and an over-all isobutane extraction efficiency of 86.1 per cent for the plant has been determined.

Plant cycle calculations furnish another means of checking the accuracy of the plant test data. Computation of the flow cycle using intake compositions, and temperature and pressure data obtained during the test should check very closely with determined operating efficiencies and volumes and analyses of the products, discharge gas, and recycle vapor streams. These calculations may indicate operating inefficiencies which are not otherwise apparent.

Final phase of the test is to make recommendations for changes in the plant, which will correct the operating inefficiencies and/or increase extraction. These changes will vary from minor improvements to large-scale modifications. The payout of the plant test is obtained when these recommendations are carried out and increased operating efficiencies are realized.



Preliminary construction operations at Anglo Iranian Oil Co.'s new refinery in England, showing erection of the framework for a contractor's warehouse building.

Anglo-Iranian Building 40,000-Bbl. Daily Plant in England

WORK is now under way on the Kent refinery project of Anglo-Iranian Oil Co. located on the Isle of Grain, England. The new refinery will have a throughput capacity of approximately 2 million long tons of crude oil per year (40,000 bbl. daily) and is designed to operate on either Persian or Kuwait oil, or a mixture of both.

Schedule on the major units to be brought into operation is:

1. Beginning 1952, crude-distillation unit with sweetening plant for simple products.

2. End 1952, lubricating-oil manufacturing plant.

3. Early 1953, catalytic cracker, and requisite treatment plants for improved products.

Major processes in order in which they are to be erected are:

1. Crude-distillation unit, gasoline stabilizer, and one copper chloride sweetening plant.

2. Vacuum distillation plant, propane deasphalting unit, furfural extraction unit, dewaxing unit, and a clay contact plant, and a blending plant for lubricating oils.

Additions also will be made of necessary equipment further to improve the quality of products, and produce special items.

Because of the limited supply of good fresh water in North Kent, sea water (approximately 4 million gallons per hour) is to be used for cooling purposes. Steam will be generated by a battery of 150,000-lb. per hour units. Back-pressure turbogenerators operating at about 650 psi. steam pressure exhaust at 175 psi. to furnish process steam for the refinery.

The hoisting unit shown here is being used to test piling on the site of the new Isle of Grain refinery.

QUESTIONS on TECHNOLOGY

by W. L. Nelson
Consulting Engineer

This department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in various phases of plant operation, as well as those connected with the marketing and utilization of petroleum products. Readers are invited to submit their problems to W. L. Nelson, technical editor. Inquiries must be signed, but only the initials will be printed.

Effect of Plant Size On Cost of Operation

I find difficulty in finding any documental reports on the effect of size of plant on operating cost. Can you direct me to references?—R. B. H.

Scarcely any detailed information on operating costs has been published. This might be expected because each operation and each plant environment is somewhat unique. Such operating costs as can be quickly located are indicated in the list of references on this page.

Nevertheless, page 753 of the Third Edition of Petroleum Refinery Engineering (McGraw-Hill Book Co., Inc., New York, 1949) shows detailed operating costs for two sizes each of topping plants, cracking plants, and a combination of these two operations. This material is discussed more completely on the Questions on Technology page of May 5, 1945, of The Oil and Gas Journal under the title of "Profit per Barrel of 'Extra' Throughput." If average operating costs are used, the cost of operation (for the particular types and sizes of plants discussed) appears from these scant data to vary inversely as about the 0.1 power of the size ratio. Furthermore, if the plant is a combination of two operations the power is raised in direct ratio, a combination of two operations such as topping and cracking varying as the 2 × 0.1 or 0.2 power, three operations as the 0.3 power, etc. Stated mathematically:

$$\left(\frac{C_L}{C_S}\right)^{0.1n} = \frac{O_S}{O_L}$$

in which C_L and C_S are the capacities of the large (L) and the small (S) plants, n is the number of combination operations, and O designates operating cost.

The upshot of the equation given above is that operating costs are not as greatly affected by plant size as most manufacturers would expect. The effect of plant size is summarized in Table 1.

It is obvious that the equation is most approximate and that it should not be applied to very small plants (topping under 1,000 bbl. per day, thermal cracking under 2,000 bbl. per day, catalytic cracking under 4,000 bbl. per day, etc.) nor can it be applied to plants larger than about 45,000 bbl. per day.

The Questions on Technology item mentioned above, introduces the operating cost factors that are least affected by plant size, namely, (1) direct and supervisory labor, (2) maintenance and insurance, and (3) depreciation and obsolescence.

M. W. Kellogg Co. of New York has from time to time published Economic Studies (see references) which are useful in estimating operating costs.

TABLE 1—EFFECT OF PLANT SIZE ON OPERATING COST (PER BBL. OF THROUGHPUT)

	Cost of operating the larger plant on a per bbl. basis, as percentage of the per bbl. operating cost of the small plant		
	Single operation	Combination of 2 operations	Combination of 3 operations
Double the plant size	93.5	87.0	81.0
Triple the plant size	90.0	80.4	72.0
Five times larger	85.3	72.5	61.7
Ten times larger	79.5	63.1	50.2
Thirty times larger	71.0	50.6	36.0

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Tank-Coil Formula

We have the following equation which came, we think, from a manufacturer, which gives the amount of surface required for a U-bend suction heater for a fuel tank.

$$S = 0.23 \text{ Gph } \ln \frac{T}{t}$$

in which Gph = the gallons per hour heated, T = the difference in the steam, and average tank temperature, and t = the steam temperature less the desired fuel oil temperature. Does it seem to be accurate?—A. F. C.

It is an accurate but approximate formula based on a heat-transfer rate of about 15. This is a satisfactory rate for light residual fuel oils but lower rates should be used for the heavier fuel oils often encountered in refineries. For this reason the constant 0.23 should be lower in some situations:

Kind of residual fuel oil—	Approx. over-all transfer rate	Approx. value of constant
A.S.T.M. No. 5	18	0.189
Bunker C	15	0.227
A.S.T.M. No. 6	12	0.283
Viscous residue	10	0.340

The equation may be derived as follows. Using the following symbols:

T_s = steam temperature
T_2 = tank temp. (approaches atmospheric temperature)
T_1 = desired fuel-oil temperature
H = over-all transfer rate

Heat transferred = lb. $(T_1 - T_2)$ sp. ht.
(also) = $H \times S \times \Delta T$

The pounds handled per hour is about 8.3 Gph., the specific heat is about 0.41, and the ΔT is the log mean temperature difference. Thus:

$$S = \frac{8.3 \times 0.41}{H} \text{ Gph} \times \frac{T_1 - T_2}{(T_s - T_2) - (T_s - T_1)} \Big/ \ln \frac{T_s - T_2}{T_s - T_1}$$

$$S = \frac{3.4}{H} \text{ Gph } \ln \frac{T_s - T_2}{T_s - T_1}$$

and for an H value of 15:

$$S = 0.23 \text{ Gph } \ln \frac{T}{t}$$

Water Saturation Distribution in Linear Flow

IN a previous discussion the steady state linear flow of oil and water through a porous medium was analyzed. Resulting equations gave expressions for the flow of oil and water. These expressions can be used to calculate the saturation distribution throughout the linear system.

The expression for rate of water flow per unit of cross-sectional area was found to be:

$$q_w = \frac{q_t + \frac{K_o}{\mu_o}\frac{dp_c}{dS_w}\frac{dS_w}{dl}}{1 + \frac{K_o}{K_w}\frac{\mu_w}{\mu_o}} \quad (1)$$

This is rearranged as follows to give an expression for dS_w/dl:

$$\frac{dS_w}{dl} = \frac{q_w\left(1 + \frac{K_o}{K_w}\frac{\mu_w}{\mu_o}\right) - q_t}{\frac{K_o}{\mu_o}\frac{dp_c}{dS_w}} \quad (2)$$

If both q_t and q_w are fixed quantities, as is the case for steady-state flow, the right-hand side of the equation is a function only of the saturation. Let it be rearranged and integrated, thus:

$$\int \left(\frac{[K_o/\mu_o]\,[dp_c/dS_w]}{q_w\,[1 + (K_o/K_w)\,(\mu_w/\mu_o)] - q_t}\right) dS_w = \int dl \quad (3)$$

By evaluating the left-hand integral graphically, the saturation distribution versus length can be found. To do so requires that a reference saturation, for example, at the outlet end of the system, be known.

Using Fig. 1 for capillary pressures and Fig. 2 for relative permeabilities, the left-hand side of Equation 3 has been calculated for a particular value of q_t and q_w and plotted versus S_w in Fig. 3. A given value of S_w immediately determines dp_c/dS_w and relative permeabilities. The absolute permeability chosen was 460 md. and the viscosities were each chosen as unity. Since the distance scale (right-hand side of Equation 3) is linear, the S_w axis on Fig. 3 has been marked off to give equal areas under the curve. Thus, the saturations at those points correspond to equal changes in linear distance. The resulting plot of distance versus saturation is Fig. 4.

It is readily apparent that the saturation distribution across a given linear system depends upon the reference saturation and upon the total rate of flow as well as upon the fractional flow of water. The saturation distribution will also change with the absolute permeability and the viscosities. This is particularly pertinent to relative permeability measurements where a steady state measurement is sought. In these measurements the saturation change has come to be known as an "end effect."

It is to be noted in computing Equation 3 that units of pressure, permeability, viscosity, and rates must be as given in Darcy's law if l is to be given in centimeters.

Nomenclature

See Engineering Fundamentals No. 431.

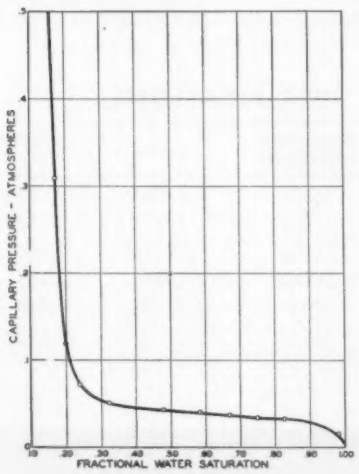

Fig. 1

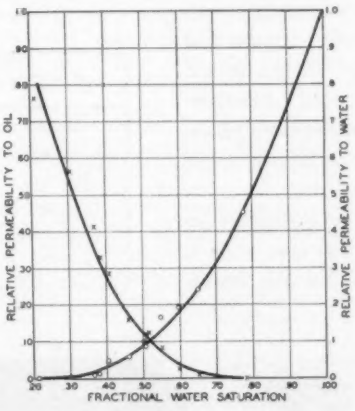

Fig. 2

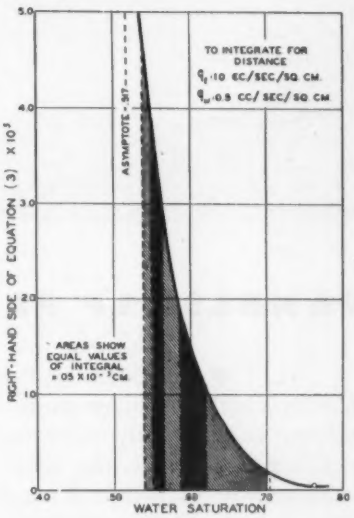
TO INTEGRATE FOR DISTANCE
q_t = 10 CC/SEC/SQ CM.
q_w = 0.5 CC/SEC/SQ CM
ASYMPTOTE - .917
AREAS SHOW EQUAL VALUES OF INTEGRAL = .05 X 10⁻³ CM.
RIGHT-HAND SIDE OF EQUATION (3) X 10³
WATER SATURATION

Fig. 3

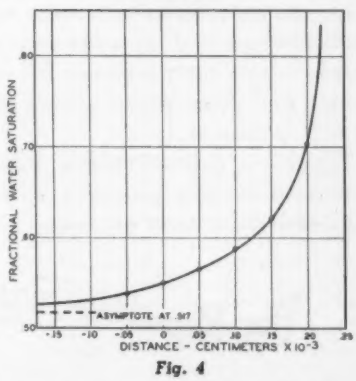

Fig. 4

Series by Dr. John C. Calhoun, Jr., Chairman, Petroleum Engineering School, Penn State College

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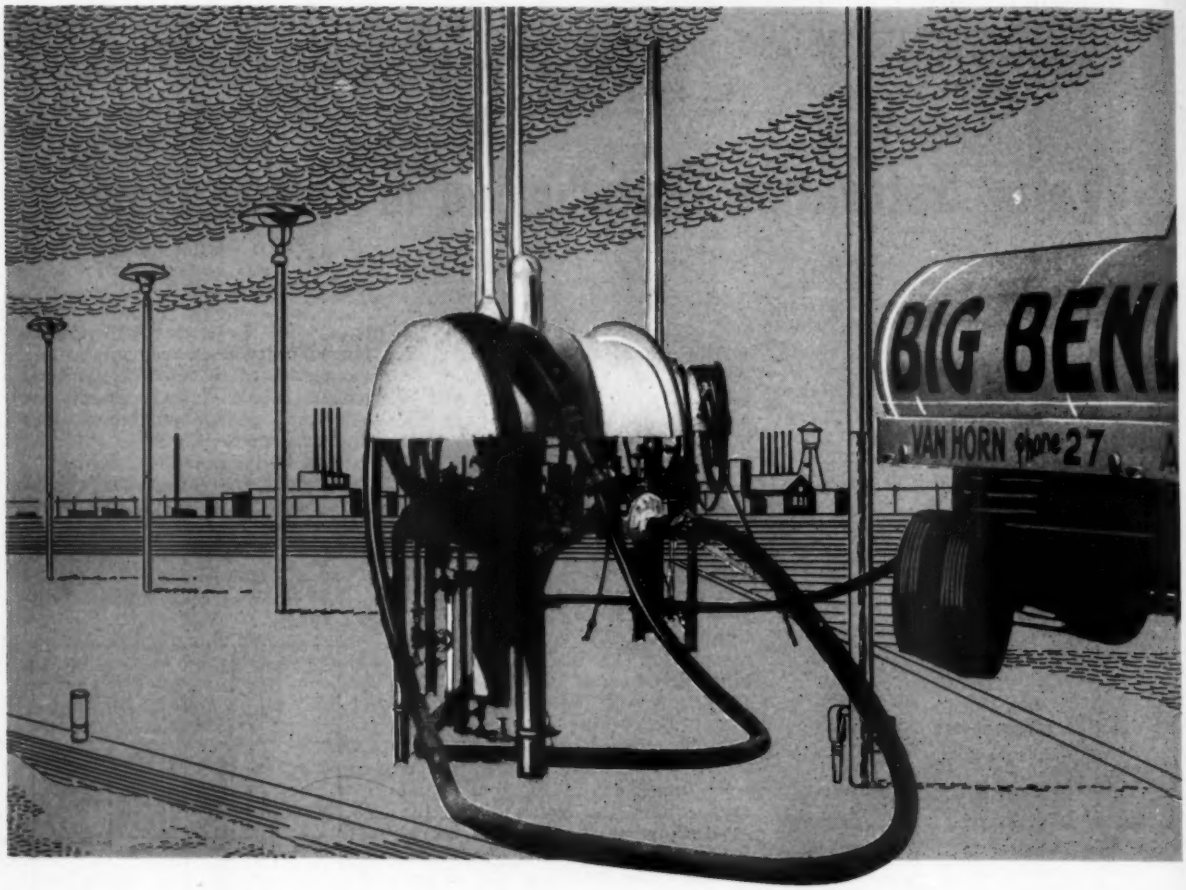

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3/4"	350#	1-1/2"	74#
1"	350#	1-13/16"	101#
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1-1/2"	300#	2-13/32"	149#
2"	275#	3"	221#

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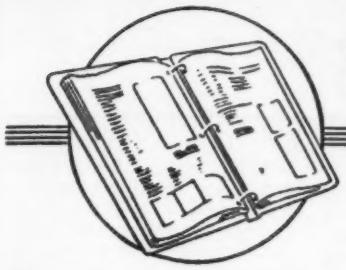

THE REFINER'S notebook

Grease Structure*

THE most satisfactory way to visualize how the plastic, jelly-like structure of a grease is formed is to imagine the tiny, invisible molecules of soap clinging to each other in long groups to form fiber-like particles of varying lengths and thicknesses. The longest fibers may be visible to the naked eye while the shortest may be almost beyond the range of the most powerful microscope.

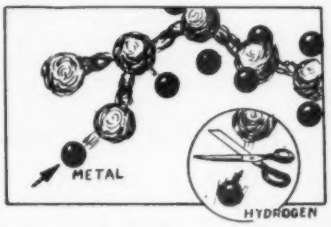

Fig. 1—If a fatty acid is "saponified," meaning that the hydrogen atom on the carboxyl group is replaced by a metal atom, the substance becomes a "soap." Soaps have different physical properties from fatty acids. Especially important is their tendency to form fibrous solids. However, saponification does not destroy the polar quality of the fatty molecule from which the soap was made.

These soap fibers form a tangled, three-dimensional, lattice-like structure within the body of the grease which is roughly comparable to a jumbled heap of very flexible twigs. The petroleum oil fills in the spaces between these fibres much like damp leaves or snow would pack into the pile of twigs. This results in a plastic structure which is the typical "body" of a lubricating grease.

When the atoms which go to make up a metallic solid such as a bearing crystallize into a solid mass, they join tightly together as the result of the attraction which they have for one another. The electrical charges that constitute the attractive forces of those atoms within the interior of the metallic mass are all balanced by the attractive forces of the atoms about them. At the surface, however, conditions differ. Here, the outermost atoms have no similar atoms beyond them, and consequently, some of their attractive forces are not "satisfied." These unsatisfied electrical forces of the surface atoms combine to form an external "field of influence" at the metallic surface capable of attracting or repelling any other electrical force within its range.

Earlier in this discussion, it was brought out that all polar molecules, because they are electrically unbalanced, are attracted by external electrical fields. If we visualize polar soap molecules as being attracted by the electrical fields at metallic surfaces, we can more readily understand why the soap molecules in a lubricating grease are attracted to—and so tenaciously held by—the electrical fields of the various metal surfaces in bearings.

Since the electrical forces within polar molecules are of the same nature as those that hold the metal atoms in the metal together, it is easy to assume that the attraction between the metal and the soap molecules will cause the metal surfaces to hold the soap molecules almost as tightly ts they would hold additional metal atoms, were they available. Thus we can visualize the metal bearing surfaces as being covered with a tightly adhering layer of polar soap molecules drawn from the grease.

But these soap molecules in a grease are only a part of the mixture. The petroleum oil molecules are nonpolar; hence are not attracted to the bearing surfaces. On the other hand, we have found that oil in grease is held within the soap-lattice structure by physical entrapment . . . but even further, by a force similar to capillarity which causes the soap and oil molecules to cling together in the mixture. This force is in additional to, and obviously more effective than, the more "fencing in" action of entrapment.

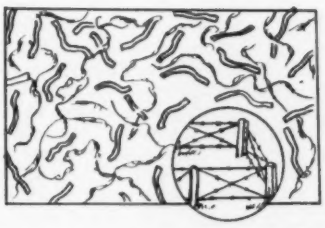

Fig. 2—Comparatively small percentages of certain metallic soaps are mixed with petroleum oils to make greases. In this mixture the soap molecules assemble together in fiber-like groups which become interspersed throughout the oil to form a lattice-like structure. This, in effect, fences in the oil molecules and makes the entire mass more or less plastic in consistency. Most metallic soaps form such a lattice structure.

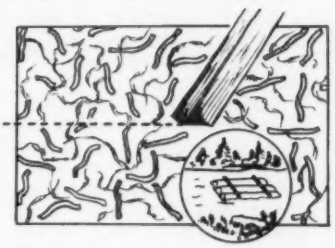

Fig. 3—When a grease is subjected to "working" the fibrous lattice-like soap structure is "sheared" along lines where force takes effect. Thus when a quantity of grease is rapidly sheared, it will assume certain characteristics of a fluid. However, when shearing is stopped the lattice-like soap structure tends to assume its original form and the mass again becomes a plastic solid.

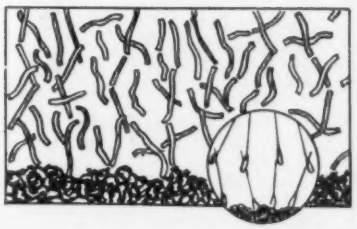

Fig. 4—Some of the soap molecules in a grease are strongly attracted to metal bearing surfaces. These tend to assemble end to end much like needles attracted to a magnet. These soap molecules also entrap and hold many oil molecules which, together with the soap molecules, form a strongly adhering film of lubricant—often several molecules thick. This film sticks so tightly that it can be removed only under the most severe conditions of rubbing and pressure.

*From material prepared by Shell Oil Co. on "Fundamentals of Lubricating Greases."

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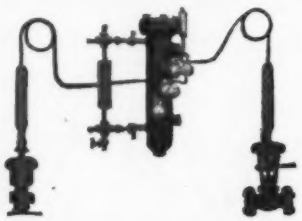

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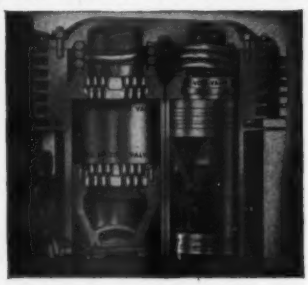

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REFINING

New Oil-Shale Process

WASHINGTON.—A new process for extracting oil from oil shale, simpler than others previously tested, gives promise of providing the most efficient and economical method of producing shale oil to date, it has been announced by Interior Secretary Oscar L. Chapman.

The new process, developed by Bureau of Mines engineers, has been put through pilot-plant tests at the Rifle, Colo., plant where, in a 10-day run, it achieved an oil yield averaging about 95 per cent of Fischer assay value of the shale treated, handling some 200 lb. of shale per hour for each square foot of bed area.

The new process, known as the gas-combustion method, utilizes a vertical retort which is continuous in operation, raw shale being fed into the top of the retort and moving downward by gravity against an upward current of hot gas which is drawn off near the top of the retort and passed to a recovery system, it was explained. As the downward-moving shale and the rising gas pass each other, the shale is heated and the gas is cooled, resulting in high thermal efficiency. Additional heat is supplied by burning part of the preheated gas with air.

Bureau experts explained that the gas-combustion process is expected to be economical compared with others thus far tried because the retort is simple and of high capacity relative to its size. The need for external heat exchangers, such as are used in the gas-flow process, for pebble stoves such as are used in the Royster process, and for water-cooled condensers is eliminated. In addition, the process requires a relatively small recovery system, because the oil-laden gas is effectively cooled in its upward journey through the incoming shale.

To Double Polythene Output

ORANGE, Tex.—Plans to double the capacity of the polythene manufacturing facilities of the Du Pont Co. here have been announced by D. B. Campbell, plant manager.

Campbell said that the new facilities will increase the plant's daily consumption of natural gas by 3,000 M.c.f. per day. It is anticipated that the unit, part of the Sabine River Works of the E. I. du Pont de Nemours Co. here, will be in partial operation by the end of 1951. Final completion is scheduled for late 1952.

The new polythene-plant expansion will require an additional 100 employes. Currently, 1,700 are employed at the Sabine River Works. Polythene, an industrial chemical in powder form, is used in manufacturing and processing plastics. The polythene, nylon, and methanol units at Orange are the world's largest facilities in each group, according to Campbell.

New T.C.C. Units Added

BEAUMONT, Tex.—Magnolia Petroleum Corp.'s refinery here has placed in operation the second of three Thermofor catalytic cracking units of a new type for production of high-octane automobile and aviation gasoline.

These units increase the refinery's output of high-octane gasoline by 50 per cent. The first of the new T.C.C. units was placed in operation in October last year; the third is scheduled for completion early this year. Construction of the new units, which will replace Houdry fixed-bed types, began about a year ago.

Shell Plant Ups Output

DALLAS.—Shell Oil Co.'s new gasoline plant at Provident City, Tex., has now begun full-scale operations after operating at only 20 per cent of plant capacity for more than 6 months while awaiting construction of a large outlet line.

The line is a 110-mile, 16-in. project from the plant to Baytown, Tex., for Texas Eastern Transmission Corp. It has now been completed and is being tested before being placed in full operation.

The new plant will process gas from the Provident City, Hope, Brushy, and Englehart gas fields. It has a daily capacity of 60,000,000 cu. ft. of gas. It will also dehydrate about 50,000,000 cu. ft. of residue gas and sell it to Texas Eastern. In addition, about 2,500 bbl. of liquid products—propane, natural gasoline, and distillate—will be recovered daily from the wet gas by means of high-pressure absorption.

Throughput Sets New Mark

TORONTO.—The largest volume of crude oil ever processed by British American Oil Co., Ltd., was recorded in 1950, according to M. S. Beringer, vice president of manufacturing for the company. British American processed 18,000,000 bbl. of crude last year, and expectes to have a total refining capacity of 23,000,000 bbl. by the beginning of 1952, he said.

Largest single factor in the company's increased throughput during the past 12 months was the completion of the major expansion program at Montreal East refinery which

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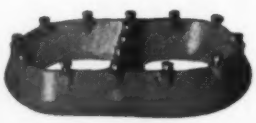

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more than doubled the capacity of the plant.

Moose Jaw, Calgary, and Clarkson refineries of the company are all presently operating at full capacity, and a project is under way at Moose Jaw which will double the capacity of the plant. It will be completed late this year. Since last May, the new propane deasphalting plant at Clarkson has been producing solvent-extracted bright stock, a high-quality lubricating oil.

A new British American refinery at Edmonton will be in operation this spring thereby adding another 2,000,000 bbl. to the company's annual throughput total.

Polymerization Unit Added

TORRANCE, Calif.—General Petroleum Corp. has added a new catalytic polymerization unit to its refinery here which will provide about 700 bbl. of high-grade blending stocks per day for use in the refinery's output of motor gasoline.

The new unit represents an investment of more than $400,000. It was built by Lummus Co. and is fed with a mixture of two hydrocarbon gases which are byproducts of all refinery cracking operations.

Research Lab Dedicated

PITTSBURGH.—A new laboratory which is claimed as the world center for scientific data pertaining to research in the petroleum industry was officially dedicated by Carnegie Institute of Technology recently.

Public inspection of the laboratory was held as part of a 2-day program for the inauguration of Dr. J. C. Warner as fourth president of the institute, and celebration of Carnegie's fiftieth anniversary.

Headed by Dr. Frederick D. Rossini, nationally known petroleum research scientist who formerly was chief of the National Bureau of Standard's thermochemistry and hydrocarbons section, the laboratory is now engaged in two large research projects for American Petroleum Institute.

Federal Oil Revenues Up

WASHINGTON.—Treasury revenue from the three federal oil taxes last year ran approximately $50,000,000 ahead of 1949 and totaled about $650,000,000, it is estimated on the basis of Bureau of Internal Revenue figures for the first 11 months.

The bureau reported last week that up to the end of November it had collected $603,913,000.

Collections from gasoline for the 11-month period were $499,604,646 against $457,474,828 in 1949, from lubricating oils $84,957,977 against $75,507,413, and from pipe-line transportation $19,350,204 against $17,223,298.

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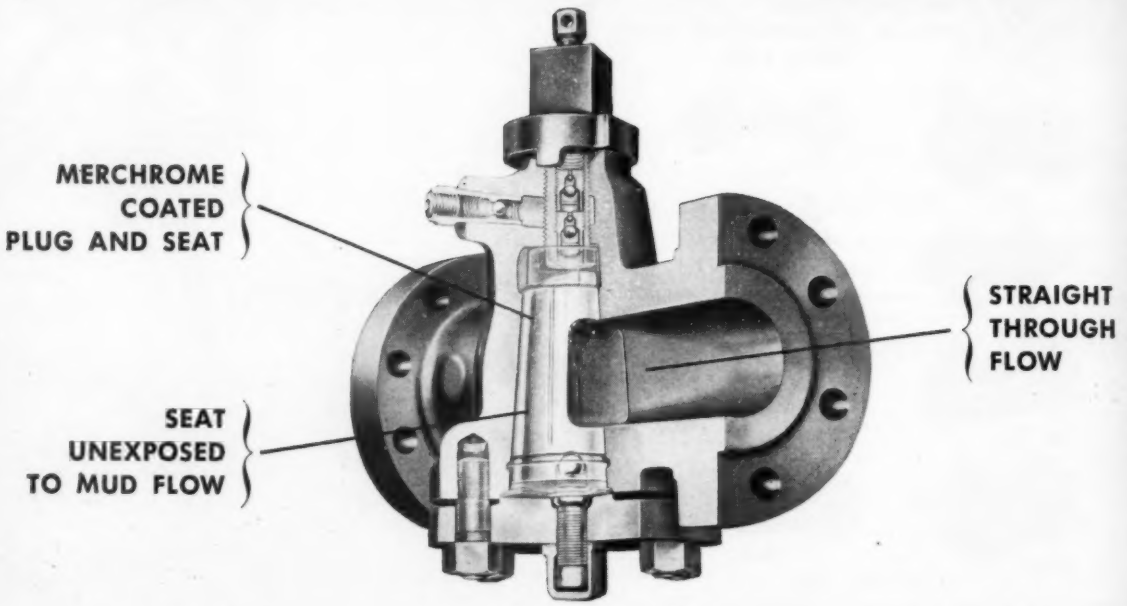

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PIPE LINES

Detroit to Get More Gas

DETROIT.—An $8,000,000 pipe-line construction program which would increase natural-gas deliveries to the Detroit area by 150,000,000 cu. ft. of gas per day is being planned by Michigan Consolidated Gas Co.

The new line, when in operation by the winter of 1951, will parallel the company's present 24-in. line from underground gas-storage fields at Austin, Mich., to Detroit. The main portion of the facility also will be 24 in. in diameter and will extend for 180 miles. The present line has a capacity of 325,000,000 cu. ft. per day.

The president of Michigan Consolidated, Henry Fink, said construction of the new line is essential to provide additional gas to Detroit industry engaged in vital defense production.

New York Extension O.K.'d

WASHINGTON. — The application of Transcontinental Gas Pipe Line Corp., Houston, to construct an extension of its main pipe line to provide an auxiliary connection for delivery of natural gas to the New York metropolitan area has been approved in an initial decision by Presiding Examiner Emery J. Woodall of the Federal Power Commission.

The new 11-mile segment of line, to cost an estimated $4,189,252, would extend from a point on Transcontinental's Texas-to-New York City line near East Carteret, N. J., to the Bay Ridge section of Brooklyn. Exact length and details of the line depend upon final survey and purchase of rights-of-way.

At present there is a single underwater crossing of the Hudson River to Manhattan at 134th Street, with a single main extending from this delivery point through Manhattan, across the Harlem River, through a portion of the Bronx, and across the East River to Astoria, Queens, Woodall said.

Since a break at any point on the mains would cause almost immediate failure of the natural-gas supply to New York companies, the existence of the alternate route would provide far greater security of supply during any emergency, the decision said.

Beavers Delay Pipe Line

PITTSBURGH.—Beavers, near Corry, Pa., chose the right-of-way of a natural-gas pipe line as a site for a new lake, delaying construction work until the dam could be blasted and the area drained. The animals built a 100-yard lake front across the pipeline route. Engineers had to use several dozen sticks of dynamite to blast the dam masonry and effect drainage so the route could be trenched.

East Ohio Seeks New Line

WASHINGTON. — Authorization of a 65-mile, 26-in. pipe line, which would carry an additional supply of natural gas into East Ohio Gas Co.'s system to meet increasing demands in northeastern Ohio, is sought by that company from the Federal Power Commission.

The proposed line, estimated to cost $4,382,170, would connect with the system of New York State Natural Gas Corp. at a point on the Ohio-Pennsylvania state line, near Petersburg, Ohio, and extend northwesterly to a point in Twinsburg Township, in Summit County, Ohio. New York State Natural Gas Co., an affiliate of East Ohio in the Consolidated Natural Gas Co. system, would deliver gas to East Ohio at the Petersburg connection.

East Ohio said that New York State Natural is planning a companion project and will file an application with the FPC for authority to develop additional storage facilities in western Pennsylvania and to install a pipe line extending to the connection with East Ohio's proposed line.

Kansas Crude Runs Drop

WICHITA.—Pipe-line runs of Kansas crude dropped 13,916 bbl. per day for the week ended January 1, the state conservation division reports. However, the week's average of 309,276 bbl. per day was still 9,276 bbl. daily above the December allowable.

To Increase Line Capacity

WASHINGTON.—The Federal Power Commission has granted temporary authorization to Transcontinental Gas Pipe Line Corp., Houston, to install a total of 45,675 hp. in compressor capacity at existing stations on its Texas-to-New York City natural-gas pipe line.

The project will increase the capacity of Transcontinental's system to 555,000,000 cu. ft. per day. The commission reserved decision with respect to deliveries and sales of the 50,000,000 cu. ft daily to be made available by construction of the added compressor capacity.

A commission presiding examiner filed an initial decision in November which would authorize these facilities and the construction by Piedmont Natural Gas Co., Inc., of facili-

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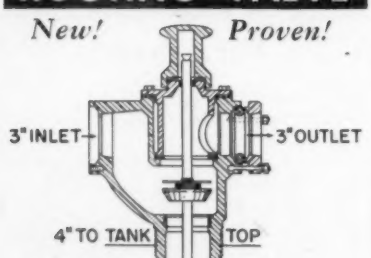

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ties to serve natural-gas markets in North and South Carolina. Under that grant, Transcontinental would supply Piedmont with up to 22,000,000 cu. ft. of gas per day. The decision is now up for review by the commission.

Slowup on Arizona Line

EL PASO.—Construction of El Paso Natural Gas Co.'s new line now being laid through northern Arizona has been slowed down due to a shortage of pipe and difficulties posed by rough terrain, according to company officials.

The line, which has a high defense priority, now stretches 252 miles. It will tap natural-gas supplies in the San Juan basin of northern New Mexico and transport gas to California.

In an earlier statement, C. C. Craigin, vice president and general manager of El Paso Natural, said that the company was getting a full output of steel from the Republic Steel plant in Gadsden, Ala.

When the line is completed, natural gas will replace about 850,000 bbl. of fuel oil per month now being used in the area. The fuel oil thus released will go to the Navy and Air Force in California.

Compressor Station Planned

WASHINGTON.—Texas Gas Transmission Corp. has asked the Federal Power Commission to authorize the construction of a compressor station with 3,960 installed horsepower on the company's main 20-in. natural-gas line near Shreveport.

The application says that the installation would be used primarily to meet the peak requirements of the company's existing customers and to permit the company to purchase additional gas in the Carthage field.

The station would increase the daily capacity of the company's 20-in. line from the Carthage field in East Texas to a connection with Texas Gas Transmission's main system near Sharon, La., from 190,000,000 cu. ft. to about 238,000,000 cu. ft. Cost of the compressor station is estimated at $1,046,000.

Equitable Asks New Station

WASHINGTON. — Equitable Gas Co. of Pittsburgh, Pa., has filed an application with the Federal Power Commission for authorization to construct a new compressor station in Washington County, Pennsylvania, to help meet increasing demands upon its natural-gas transmission system.

The project, estimated to cost about $1,045,000, would include a new compressor station consisting of three gas-engine-driven, 1,100 hp. compressor units and connecting pipe lines; a glycol dehydration plant; gas scrubbers; and auxiliary equipment.

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Pipe-Line Construction

FOLLOWING is a tabulation of pipeline projects which are planned or under construction. Included are crude-oil, products, and natural-gas lines. The list was compiled from surveys made by The Oil and Gas Journal.

Crude-Oil Pipe Lines

Gulf Refininge Co., Tulsa, Pipe Line Division.—72 miles, 6-in., under way, El Dorado, Kans., to Webb City, Okla.; Pipeline Service Co., contractor. J. W. Welcher Atlanta, Kans., spreadman.

Pan American Pipe Line Co.—80 miles, 10-in., under way, from southern part of Scurry County, Texas, to a connection with Humble pipe line near San Angelo, Tex.; Brown & Root, contractor.

Platte Pipe Line Co.—1,080 miles, 10-20-in., planned, Worland, Wyo., to Wood River refining area in Illinois.

Portland Pipe Line Co. (Montreal Pipe Line Co., Ltd.).—85 miles, 18-in., under way, Portland, Me., to Gorham, N. H.; Oklahoma Contracting Co., contractor of Section 1; H. A. Waylie, Westbrook, Me., superintendent.

Portland Pipe Line Co. (Montreal Pipe (Canada).—321 miles, 18-in., contracted, Gorham, N. H., to international boundary near N. Troy, Vt.; Associated Pipeline Contractors, Inc., contractor of Section 2, Lacy Walker, Barton, Vt., spreadman.

Portland Pipe Line Co. (Montreal Pipe Line Co.).—68 miles, 18-in., contracted. Canadian boundary to Montreal; Fred Mannix, contractor of Section 3.

Texas Pipe Line Co.—56 miles, 12-in., Chico to Wichita Falls, Tex.; R. H. Fulton & Co., contractor.

Products Pipe Lines

Great Lakes Pipe Line Co.—355 miles, 12-in., authorized, Kansas City through Omaha and Sioux City Iowa, to Sioux Falls, S. D.

Phillips Petroleum Co.—281 miles, 10-in., proposed, Borger, Tex., to Yale, Okla.

Phillips Petroleum Co. and Shamrock Oil & Gas Co.—155 miles, 6-in., planned, extension on 600-mile line at Phillips, Tex., via La Junta, to Denver.

Plantation Pipe Line Co.—432 miles, 14-13-in., Baton Rouge to Bremen, Ga.—to Charlotte, N. C., Williams Brothers, Co., contractor. Completion scheduled by end of 1951.

Salt Lake Pipe Line Co.—140 miles, 8-in., contracted Boise, to Baker, Idaho; Bechtel Corp., contractor.

Susquehanna Pipe Line Co.—126 miles, 8⅝-in., under way, Toledo, Ohio, to Sarnia, Ont., Canada; H. L. Gentry Construction Co., contractor. James Mitchell, Toledo, Ohio, spreadman.

Natural-Gas Pipe Lines

Atlantic Gulf Gas Co. (United Gas Pipe Line Co.).—1,530 miles, planned, Alabama-Florida-Georgia-South Carolina.

Commonwealth Natural Gas Corp.—84 miles, 12-in., contracted, Richmond to Newport News, Va.; Ray L. Smith, contractor.

Commonwealth Natural Gas Corp.—104 miles, 18-in., under way, Stanardsville to near Petersburg, Va.; Ray L. Smith & Son, contractor, Don C. Smith, Orange, Va., spreadman.

Commonwealth Natural Gas Corp.—537 miles, 20-in., proposed, West Bend, Ky., to Norfolk, Va.

Consolidated Gas Utilities Corp.—41 miles, 12-in., planned, Enid to Blackwell, Okla., Marlow to Cement, Okla.

East Tennessee Gas Corp.—150 miles, 16-in., under way, Knoxville to Bristol, Tenn.

East Tennessee Natural Gas Co.—398 miles, 3-16-in., planned, Nashville to Chattanooga to Knoxville, Tenn., and laterals.

East Tennessee Natural Gas Co.—106 miles, 12-16-in., contracted, Lobelville to Tullahoma, Tenn.; Oman Construction Co., contractor.

East Tennessee Natural Gas Co.—130 miles, 12-in., under way, Athens, via Chattanooga, to Tullahoma, Tenn.; N. A. Saigh Co., Inc.

East Tennessee Natural Gas Co.—120 miles, 12-in., planned, Chattanooga to Knoxville, Tenn.; Walters & Saigh Construction Co.

East Tennessee Natural Gas Co.—185 miles, 16-in., planned, Lobelville to Chattanooga, Tenn., Walters & Saigh Construction Co.

Eastern Natural Gas Corp.—292 miles, 24-in., proposed, Phoenixville, Pa., via New Haven and Hartford, Conn., Providence, R. I., Springfield, Mass., and Boston.

Egyptian Natural Gas Co.—80 miles, 6-8-in., authorized, Norris City to Salem-Centralia, Ill., area.

El Paso Natural Gas Co.—450 miles, 24-in., under way, San Juan basin, New Mexico, to Franconia, Ariz.

Home Gas Co.—70 miles, planned, Orange, Sullivan, Rockland, and Cattaraugus counties, New York.

Magnolia Petroleum Co.—60 miles, 4-24-in., gathering system in LaWard and Lolita fields, Texas; Henry L. Lemons & Co., contractor. W. A. Remington, spreadman.

Michigan Gas Storage Co.—150 miles, 20-in., planned, Chelsa terminal-Winterfield and Cranberry Lake, Mich.; Mahoney Contracting Co., contractor.

Michigan-Wisconsin Pipe Line Co.—197 miles, 6-18-in., under way, Milwaukee to Green Bay and Two Rivers, Wis.; G. G. Griffis Construction Co., contractor. F. K. Egan, Fond du Lac, Wis.

Mississippi River Fuel Corp.—40 miles, 18-in., authorized, Dubach to Perryville, La.

New York State Natural.—164 miles, 16-in., planned, Ithaca to Albany, N. Y.

New York State Natural Gas Corp.—70 miles, 20-in., planned, North Oakford, Pa., to Ohio state line.

Northern Natural Gas Co.—597 miles, 20-26-in., contracted, ten loops from Texas to northern Iowa.

Northern Natural Gas Co.—76 miles, 4 to 12-in., under way, gathering line in vicinity of Hugoton, Kans., Cheek Construction Co., contractor, Troy Cheek, Ulysses, Kans., superintendent.

Northern Natural Gas Co.—111 miles, 24-in., under way, Ogden, Iowa, to St. Paul, Minn.; R. B. Potashnick, contractor.

Northern Natural Gas Co.—75 miles, 26-in., under way, north of Beaver, Okla.; R. H. Fulton & Co., contractor of Loop 2. Merele Lewellen, Mead, Kans., spreadman.

Northern Natural Gas Co.—72½ miles, 26-in., under way, Bushton to Minneapolis, Kans.; R. H. Fulton & Co., contractor of Loop 4. M. L. Boyd, Salina, Kans., spreadman.

Northern Natural Gas Co.—155 miles, 20-in., contracted, Garden City to Bushton, Kans.; R. H. Fulton & Co., contractor of Loop 5. Jerry Nash, Garden City, Kans., spreadman.

Northern Natural Gas Co.—222 miles, 26-in., under way, Borger, Tex., to Nebraska line; R. H. Fulton & Co., contractor. M. C. Boyd, Ashland, Kans., spreadman.

Northwest Natural Gas Co.—750 miles, planned, Washington, Oregon, and Idaho.

Oklahoma Natural Gas Co.—53 miles, 26-in., Edmond to Depew, Okla.; Trojan Construction Co., contractor.

Oklahoma Natural Gas Co.—40 miles, 16-in., Velma to Chickasha, Okla.; Trojan Construction Co., contractor.

Pacific Gas & Electric Co.—47 miles, 8-in., authorized, Salina to Kilig City, Calif.

Pacific Northwest Pipe Line Co.—400 miles, 22-in., gathering lines on Texas Gulf Coast to Pacific Northwest pipe line.

Pacific Northwest Pipe Line Corp.—2,175 miles, 26-in., authorized, Texas Gulf Coast to Pacific Northwest.

Panhandle Eastern Pipe Line Co.—356 miles, 26-in., authorized, looping in Texas,

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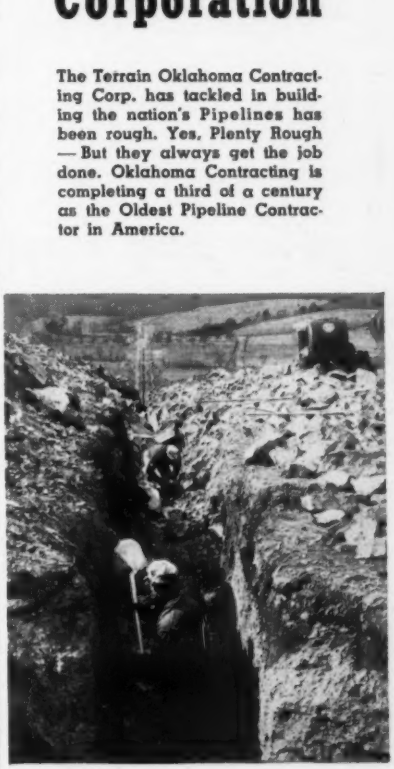

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Phillips Petroleum Co.—99 miles, 3-16-in., under way, Sherman and Hansford counties, Texas gas-gathering system; Vaughn & Taylor Construction Co., Inc., Dumas, Tex.

Piedmont Natural Gas Co.—1,350 miles, 20-in., planned, Greenville, Miss., to Carolinas.

Plains Natural Gas Co.—120 miles, 4-24-in., contracted, Oklahoma-Kansas area, Hugoton field, gathering system; Midwestern Constructors, Inc., (Arey-Phillips Construction Co.) contractor. T. S. Nunley, Liberal, Kans., chief inspector.

San Diego Gas & Electric Co.—53 miles, 16-in., planned, San Diego County, California.

San Diego Gas & Electric Corp. (Southern Counties Gas Co.)—85 miles, authorized, San Diego, Riverside, and Moreno, California.

South Central Alabama Natural Gas Co., Inc.—150 miles, proposed, central Alabama.

South Georgia Natural Gas Co.—248 miles, planned.

South Jersey Gas Co.—75 miles, 10-12-14-in., under way, Pleasantville, N. J., to Bustleton, Pa.; G. G. Griffis, Inc., contractor, Ray Abney, Millville, N. J. spreadman.

Southwestern Michigan Gas Co.—55 miles, 12¾-in., proposed, Oakland County to Marysville, Mich.

Southern Counties Gas Co. of California.—81 miles, 20-in., authorized, looping.

Southern Natural Gas Co.—18 miles, 18-in., under way, Gwinville, Miss., to Selma, Ala.; Sheehan Pipe Line Construction Co., contractor. Jim Brown, Meridian, Miss., spreadman.

Southern Natural Gas Co.—161 miles, 16-18-in., under way, Selma, Ala., to Elmore, Ala. Associated Pipeline Contractors, Inc., contractor. Lacy Walker and L. H. Gray, spreadman.

Southern Natural Gas Co.—138 miles, 20-22-in., planned, Chattanooga, Tenn., to Lexington, Miss.

Southern Natural Gas Co.—375 miles, 34-in., planned, Gwinville, Miss., to Atlanta, Ga.

Southern Union Gas Co.—78 miles, 8-10-14-in., planned, New Mexico loops and laterals.

Sunray Oil Corp.—133 miles, 8-30-in., system for Snyder gasoline plant, Vaughn & Taylor Construction Co., contractor. D. D. Vaughn, spreadman.

Tennessee Gas Transmission Co.—181 miles, 16-in., under way, Bayou Sale to Kinder, La.; Latex Construction Co., contractor. H. L. Leake, superintendent.

Tennessee Gas Transmission Co.—700 miles, 20-26-in., planned. Burnaugh, Ky., to Massachusetts including 400-mile line to Buffalo.

Tennessee Gas Transmission Co.—95 miles, 20-in., under way, Natchitoches to Kinder, La.; Latex Construction Co., contractor. F. A. Silar, superintendent.

Tennessee Gas Transmission Co.—350 miles, 30-in., planned, first 150 miles of loops to be laid at Monroe, La., Greenville, Miss., Midland and Portland, Tenn.

Tennessee Gas Transmission Co.—70 miles, 26-30-in. contracted, between Stations 104 and 110; Anderson Brothers Corp., contractor. E. C. McCoy and Arkie Hobson, Richmond, Ky., spreadmen.

Tennessee Gas Transmission Co.—176 miles, 30-in., under way, western Tennessee and Kentucky; Price-Morrison, contractor. Jack Hodges and R. L. McMillon, superintendents.

Tennessee Gas Transmission Co.—75 miles, 30-in., under way, from near Glasgow northeastward to near Lebannon, Ky.; Morrison Construction Co., contractor. R. L. McMillon, Adamsville, Tenn., spreadman.

Tennessee Gas Transmission Co.—99 miles, 30-in., under way, near Dickson, southwestward to near Selmer, Tenn.; H. C. Price, contractor. Jack Hodges, Linden, Tenn., spreadman.

Tennessee Gas Transmission Co.—170 miles, 26-30-in., contracted, Kentucky; Anderson Brothers Corp., contractor.

Texas Eastern Transmission Corp.—1,400 miles, 26-in., planned, Texas to Pittsburgh, loops.

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Texas Gas Transmission Corp.—723 miles, 26-in., under way, Lisbon, La., to Middletown, Ohio.

Texas-Illinois Natural Gas Pipeline Co.—1,300 miles 30-in., under way, Corpus Christi area to Joliet, Ill.

Texas-Illinois Natural Gas Pipeline Co.—100 miles, 26-in., La Gloria to Refugio, Tex.; Midwestern Constructors, Inc., contractor of Schedule 1. M. T. Wilhite, superintendent.

Texas-Illinois Natural Gas Pipeline Co.—100 miles, 30-in., under way, Mississippi River to Effingham, Ill.; Midwestern Constructors, Inc., contractor of Schedule 11. R. C. Stanley, superintendent.

Texas-Illinois Natural Gas Pipeline Co.—100 miles, 30-in., to start in 1951, Effingham to Sibley, Ill.; Midwestern Constructors, Inc., contractor to Schedule 12.

Texas-Illinois Natural Gas Pipeline Co.—92 miles, 30-in., to start in 1951; Sibley to Joliet, Ill.; Midwestern Constructors, Inc., contractor of Schedule 13.

Texas-Illinois Gas Pipe Line Corp.—409 miles, 30-in., contracted, Arkansas and Missouri; Bechtel Corp. A. M. Berlander, general superintendent.

Texas-Illinois Gas Pipe Line Corp.—126 miles, 30-in., contracted; H. C. Price, contractor. Work under way.

Texas-Illinois Gas Pipe Line Corp.—113 miles, 30-in., contracted; H. C. Price, contractor. Work under way.

Texas-Illinois Gas Pipe Line Corp.—97 miles, 26-in., contracted; H. C. Price, contractor. Work under way.

Texas-Illinois Gas Pipe Line Corp.—38 miles, 24-in., contracted; H. C. Price, contractor. Work under way.

Texas-Illinois Gas Pipe Line Corp.—38 miles, 12-in., contracted; H. C. Price, contractor. Work under way.

Trunkline Gas Co.—278 miles, 20-in., contracted, Valley of Texas; R. H. Fulton & Co., contractor.

Trunkline Gas Supply Co.—1,775 miles, 10-26-in., planned, includes 740-mile, 26-in., Lake Charles, La., to Tuscola Station of Panhandle Eastern Pipe Line Co., and 1,035 miles, 10-24-in., Lake Charles, La., to McAllen, Tex., completion due October 1, 1952.

Trunkline Gas Supply Co.—176 miles, 26-in., under way, Darnell, La., to Longville, La.; Houston Contracting Co., contractor of Section A, main line. E. C. Norris, Olla, La., spreadman. W. H. Hayes, spreadman, De Ridder, La.

Trunkline Gas Co.—180 miles, 26-in., contracted, Darnell, La., to Senatobia, Miss.; Anderson Bros. Corp., contractor, Section B, main line.

Trunkline Gas Supply Co.—184 miles, 26-in., under way, Senatobia, Miss., to Paducah, Ky.; R. H. Fulton & Co., contractor of Section C, main line. Ed Veach, Memphis, Tenn., spreadman.

Trunkline Gas Co.—186 miles, 26-in., contracted, Joppa to Tuscola, Ill.; Mahoney Contracting Co., contractor of Section D, main line.

Trunkline Gas Co.—262 miles, 20-in., contracted, McAllen to Altair, Tex.; R. H. Fulton & Co., contractor of Section E and F, lateral lines.

Trunkline Gas Co.—217 miles, 24-in., contracted, Longville, La., to Altair, Tex.; Anderson Bros. Corp., contractor of Sections G and H, lateral line.

Trunkline Gas Supply Co.—71 miles, 20-16-10-in., contracted, Longville, La., south; Houston Contracting Co., contractor of Section 1, lateral line.

United Gas Pipe Line Co.—51 miles, 12¾-in., proposed, Soso and Sherron fields, to near Meridian, Miss.

United Gas Pipe Line Co.—23 miles, 16-in., proposed, Mud Lake field, La., to near Port Arthur, Tex.

United Gas Pipe Line Co.—93 miles, 6 to 16-in., proposed, fields in Plaquemines Parish to near New Orleans.

United Gas Pipe Line Co.—26 miles, 20-in., planned, Louisiana, connecting with East Texas system.

United Gas Pipe Line Co.—90 miles, 16-in., planned, West Bay field to New Orleans.

Utah Natural Gas Co.—325 miles, 22-in., proposed, "Four Corners" in southeastern Utah.

Valley Gas Pipe Line Co., Inc.—500 miles, 24-in., proposed, Berclair, Goliad County, to northeast Saratoga, Hardin County, Texas, to Vermilion Bay area of Louisiana.

Valley Gas Pipe Line Co., Inc.—1,000 miles, 30-in., proposed, Saratoga northeast to Arcadia, La., to El Dorado and Jonesboro, Ark., Cape Girardeau, Mo., Lawrenceville, Ill., Terre Haute, Ind., and Atlanta, Ind., thence to northeast terminal point in southern Michigan.

Virginia Natural Gas Co.—153 miles, Buckingham to Richmond and Portsmouth, Va.

Foreign Crude-Oil Pipe Lines—Planned and Under Way

Cia. de Petroleo Ganso Azul, Ltd.—41 miles, 4-in., planned, Ganso Azul field to Pucalpa on upper Ucayali River, Peru.

Condor S.P.A. (Shell).—80 miles, planned, Genoa to Rho, near Milan, Italy.

Direccion General de Yacimientos Petroliferos Fiscales.—409 miles, under way, Plaza Huincul to Bahia Blanca, Argentina.

Iraq Petroleum Co., Ltd.—556 miles, 30-32-in., under way, Kirkuk, Iraq, to Banias, Syria, 1952; Bechtel-Kirkuk, contractor.

Middle East Pipelines, Ltd.—800 miles, 34-36-in., planned, Iran to a Levantine port.

Petroleos Mexicanos.—160 miles, 10-in., under way, Minatitlan to Salina Cruz, Mexico.

Petroleos Mexicanos.—145 miles, 12-in., considered, 18 de Marzo field via Reynosa to Monterrey, Mexico.

Shell Caribbean Petroleum Co.—11 miles, 16-in., authorized; Bachaquero (north) to Lagunillas, Venezuela, 5-51.

Shell Caribbean Petroleum Co.—165 miles, 30-in., authorized; Palmarejo to terminals on the Paraguana Peninsula (Cardon and Las Piedras, Venezuela), 12-51.

Foreign Products Pipe Lines—Planned and Under Way

Colombia Ministry of Petroleum.—90 miles, 6-in., planned, Puerto Berrio to La Dorada, Colombia.

Colombia Ministry of Petroleum.—160

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miles, 4-in., planned, Puerto Berrio to Medellin, Colombia.

Colombian Ministry of Petroleum.—75 miles, 4-in., planned, Buena Ventura to Cali, Colombia.

Estrada de Ferro Santos Jundiai.—32 miles, 10-in., under way, Santos to Sao Paulo, Brazil; Techint, contractor.

Estrada de Ferro Santos a Jundiai.—32 miles, 18-in., under way, Santos to Sao Paulo, Brazil (fuel oil line); Techint, contractor.

Northern Pipe Line, Ltd.—300 miles, 10-in., planned, Montreal, Que., to Toronto, Ont., Canada.

Petroleos Mexicanos.—160 miles, 10-in., under way, Minatitlan to Salina Cruz, Mexico.

State of Cundinamarca, Colombia.—120 miles, planned, Puerto Salgar, to Bogota, Colombia.

Foreign Natural-Gas Pipe Lines—Planned and Under Way

Azienda Generale Italiana Petroli.—Under way, Lodi to Milan, Italy.

Azienda Generale Italiana Petroli.—Under way, Lodi to Turin, Italy.

Azienda Generale Italiana Petroli.—Under way, Lodi to Genoa, Italy.

Direccion General del Gas del Estado.—310 miles, 8-in., under way, Plaza Huincul to Neuquen, Argentina, to the vicinity of General Conesa, Argentina.

Direccion General del Gas del Estado.—62 miles, under way, Comodoro Rivadavia to Caleta Olivia, Argentina.

Northwest Natural Gas Co.—950 miles, 24-in., planned, Alberta fields to Vancouver, B. C., Seattle, Wash., and Portland, Ore.

Petroleos Mexicanos.—205 miles, 16-in., considered, Monterrey to Torreon, Mexico.

Petroleos Mexicanos.—260 miles, 20-in., considered, Monterrey to Tampico and Poza Rica, Mexico.

Petroleos Mexicanos, Mexican Gas Co., and Industrial Gas Co.—600 miles, planned, Reynosa, Tamaulipas, to Mexico City, D. F.

Venezuela Atlantic Transmission Corp.—195 miles, 10-12-16-in., planned, El Placer near Las Mercedes, State of Guarico to Caracas, La Guaira, Maracay, and Valencia.

Westcoast Transmission Co., Ltd.—1,408 miles, 30-in., planned, northern Alberta to Vancouver, B. C., and northern California.

Western Pipe Lines.—1,200 miles, 22-in., planned, Southern Alberta to Duluth, Minn.

Foreign Crude-Oil Projects—Completed

Arabian American Oil Co.—Ain Dar to Abqaiq, Saudi Arabia, 30 miles, 20-22-24-in.

Basrah Petroleum Co. (Affiliate of Iraq Petroleum Co.).—72 miles, 12 and 16-in., Zubair to Fao.

Direccion General de Yacimientos Petroliferos Fiscales.—25 miles, Tupungato-Lujan de Cuyo, Argentina.

Interprovincial Pipe Line Co.—1,150 miles, 16-18-20-in., Edmonton, Alta., to Superior, Wis., 10-50; Canadian Bechtel, Ltd., Fred Mannix Co., and Williams Brothers Corp., contractors.

Mene Grande Oil Co.—7 miles, 16-in., loop in Anaco-Puerto La Cruz section, Venezuela, Chicago Bridge & Iron, contractor.

Mene Grande Oil and Creole Petroleum.—15 miles, 16-in., loop Oficina-Anaco, Puerto La Cruz, Venezuela.

Montreal Pipe Line Co., Ltd.—68 miles, 18-in., completed, near Highwater, Que.; to Montreal East; Fred Mannix & Co., contractor of Section 3.

Petroleos Mexicanos.—280 miles, 12-in., Poza Rica to Salamanca, Mexico.

Shell Caribbean Petroleum Co.—18 miles, 4-in., completed, Mara to Palamarejo, Venezuela.

Shell Caribbean Petroleum Co.—16 miles, 14-in., completed, Tia Juana to Cabimas, Venezuela.

Trans-Arabian Pipe Line Co.—1,068 miles, 30-31-in., Abqaiq, Saudi Arabia, to Sidon, Lebanon, 10-1; Williams Brothers Overseas Co. and International Bechtel, Inc., contractors.

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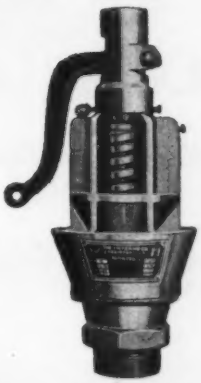

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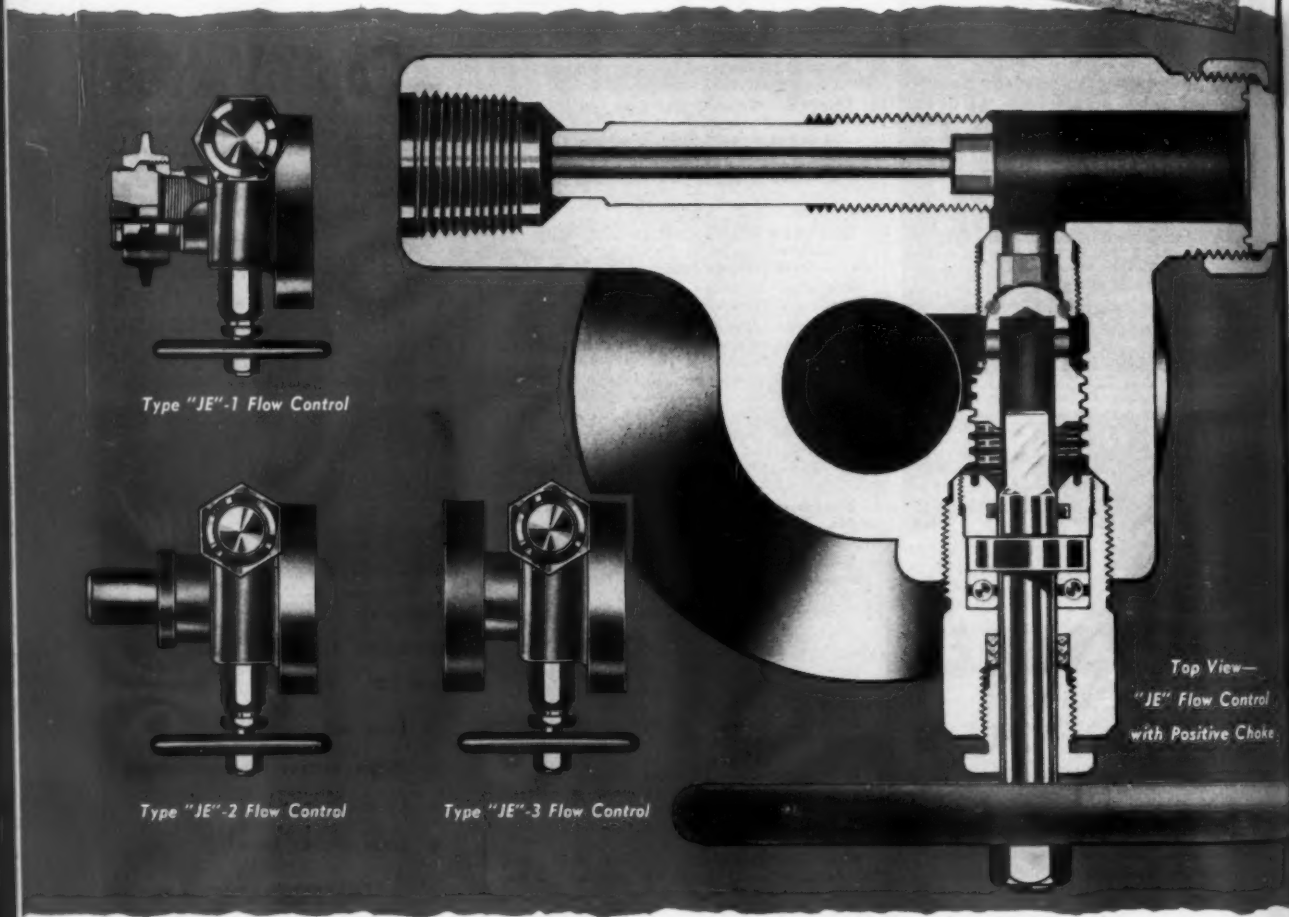

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Venezuelan Atlantic Refining Co.—12 miles, 8-in., Ruiz to Sabon, Venezuela.

Winnipeg Pipe Line Co., Ltd.—75 miles, 16-in., Gretna to Winnipeg, Manitoba; Sparling-Fowler Co., Ltd.

Foreign Products Pipe Lines—Completed

Creole Petroleum Corp.—10 miles, 8-in., Catia de la Mar to Nueva Caracas, Venezuela, 11-50; Macco-Panpacific, contractor.

Shell Caribbean Petroleum Co.—26 miles, 2-in. (butane and natural gasoline), La Paz to Palmarejo, Venezuela.

Shell Caribbean Petroleum Co.—17 miles, 3-in. (butane), Mara to La Paz, Venezuela.

Shell Caribbean Petroleum Co.—15 miles, 16-in. (water), Carrasquero (Rio Limon), to Mara, Venezuela.

Shell Caribbean Petroleum Co.—19 miles, 12-in. (water), Mara to La Paz, Venezuela.

Foreign Natural-Gas Pipe Lines—Completed

Petroleos Mexicanos.—60 miles, 8-in., Monterrey to Saltillo, Mexico, 12-15.

Westcoast Transmission Co.—Alberta gas fields to Dawson Creek, B. C., Canada.

Consolidated Hearing Set

WASHINGTON.—A consolidated hearing involving five applications for proposed natural-gas service to communities in Pennsylvania and New York has been scheduled for January 30 here.

In four of the applications, the companies are seeking natural gas from subsidiaries of Columbia Gas System, Inc. Warwick Gas Corp., of Florida, N. Y., and Crystal City Gas Co., of Corning, N. Y., have asked the commission to direct Home Gas Co., of Pittsburgh, to supply them with natural gas. Citizens Gas Co., Stroudsburg, Pa., and Bangor Gas Co., Bangor, Pa., are seeking gas from Manufacturers Light & Heat Co., Pittsburgh. The fifth applicant, Pen Argyl Gas Co., Pen Argyl, Pa., proposes to construct a lateral between its distribution system and Bangor Gas.

Larger Loop Line Sought

WASHINGTON.—A hearing has been scheduled by the Federal Power Commission for January 22 here on the application of Southern Natural Gas Co., of Birmingham, Ala., proposing a change in loop-line facilities previously authorized by FPC in the Talladega and Sylacauga, Ala., area.

The change proposes substitution of a 10.4-mile, 8⅝-in. loop line in place of a 4¾-mile, 6-in. line, construction of which has already been authorized. Southern Natural says the larger line would enable it to supply the increasing natural-gas requirements of Sylacauga, and also to provide capacity for servicing increased requirements of Talladega.

The new line, if FPC permission is granted, would increase the delivery capacity of Southern Natural's Talladega-Sylacauga lateral from 4,540,000 cu. ft. to 12,000,000 cu. ft. per day. Construction cost is estimated at $247,830. Temporary authorization for construction was authorized by FPC on October 3.

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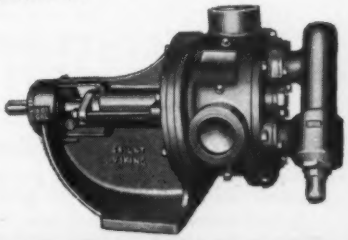

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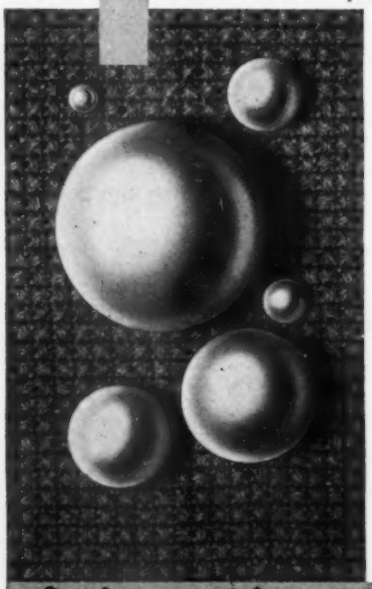

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NATURAL GAS

Under The Gulf

Company plans gas system off Louisiana coastline

WASHINGTON.—Plans for what may be the first comprehensive underwater natural-gas gathering system in the Gulf of Mexico were laid before the Federal Power Commission last week by United Gas Pipe Line Co.

The company proposes to build 26.7 miles of 10 and 14-in. line to tie in to its $111,510,000 expansion program for which FPC approval was asked last July (*The Oil and Gas Journal, August 10, 1950, page 111*).

In its July application, United provided for a pipe line from the Pure Oil Co.'s offshore platform off the coast of Louisiana. It now proposes to build about 12.3 miles of 14-in. line from the Pure platform southwesterly to a platform operated by Magnolia Petroleum Co., Continental Oil Co., and Newmont Oil Co., and a 14.4-mile, 10-in. line from that platform southerly to another platform operated by the same companies. The 12.3-mile section would cost an estimated $1,279,657 and the 14.4-mile line would cost $1,222,455.

Under the terms of its contract with Magnolia, United is not required to construct the 10-in. line until the demonstrated reserves in Magnolia's offshore field are 1 trillion cubic feet or more, but if Magnolia builds the line and it is later determined that the reserves exceed that figure, United will seek authority to acquire it.

Four Firms Propose Merger

WASHINGTON.—Merger and consolidation of Allegany Gas Co., Alum Rock Gas Co., and Dempseytown Gas Co. with North Penn Gas Co. has been proposed in an application filed with the Federal Power Commission.

The first three companies are all wholly owned subsidiaries of North Penn, which in turn is a wholly owned subsidiary of Pennsylvania Gas & Electric Corp. Application for the merger was based on the proposition that the companies had been operating for many years as a single organization with substantially the same personnel, and consequently should be recognized as such.

North Penn's pipe line facilities, located in McKean, Potter, and Tioga counties, Pennsylvania, are interconnected at numerous points with Allegany Gas Co., and the two companies operate under one management, according to the application.

Alum Rock sells gas to Dempseytown Gas Co. at several points in Clarion and Venango counties, and serves at retail the Borough of Callensburg plus certain unincorporated communities and scattered domestic consumers. Dempseytown, which operates facilities in Clarion, Forest, and Venango counties, serves at retail certain unincorporated communities and scattered domestic consumers, with a substantial portion of its gas supplied to industrial consumers. It also supplies natural gas at wholesale to Tionesta Gas Co. and Sylvania Corp.

Concurrent with the filing of the application for approval of the merger, Allegany, North Penn, and Dempseytown filed notice of withdrawal of an application filed with the commission a year ago, in which Allegany proposed to acquire all the natural-gas facilities of North Penn and Dempseytown.

New Combustion Method

NEW YORK.—A new combustion method of burning natural gas and other city gases which could aid greatly in expediting war production has been brought to an advanced experimental stage, according to an announcement by the American Gas Association.

The new method applies principles of jet propulsion to stationary industrial heating. Under the Association's industrial-gas research program, experiments have been developed for the gas industry by which gas has been burned by means of "detonation combustion" at such rapid rates that heat can be produced in a steel-melting furnace or a heat-treating furnace many times faster than in today's modern equipment.

Detonation combustion is achieved through a rapid series of instantaneous explosions, each of which resembles the terrific explosions that jet-propel a rocket hundreds of miles into the air. By concentrating the heat of these explosions into a furnace, melter, or other industrial-heating apparatus, the capacity of apparatus is enlarged many times, the association claims.

Engineers in the gas industry are studying methods for further improving detonation combustion and means of applying it.

Lion Forms Gas Department

EL DORADO, Ark.—The formation of a natural-gas department of the oil-production division of Lion Oil Co. was announced this week by J. E. Howell, vice president in charge of production for the company. William M. Wilson, formerly assistant superintendent of the refining division, will be superintendent of the new department.

In announcing formation of a natural-gas division, Howell said: that due to Lion Oil Co.'s greatly increased crude-oil production, the company's activities in the processing of natural gas, natural gasoline, and liquefied petroleum gases have grown so large that a new department was needed to handle them.

The company is now constructing a gas-gathering system and natural-gasoline plant in the Diamond M and Sharon Ridge (Canyon) fields in Scurry County, Texas, Howell said. Lion Oil, as largest single owner among eighteen companies and individuals participating, will operate the plant which will have an ultimate capacity of 77,000,000 cu. ft. of gas per day.

Lion Oil is also operator and owner of the largest interest in the Shuler Unit gasoline and cycling plant in Shuler, Ark., field.

Carolina Loses Decision

WASHINGTON.—The Federal Power Commission has denied the motion of Carolina Natural Gas Corp., Charlotte, N. C., requesting oral argument on exceptions to the initial decision of an FPC presiding examiner authorizing Piedmont Natural Gas Co., Inc., of Spartanburg, S. C., to serve natural-gas markets in North and South Carolina.

Carolina Natural and Public Service Co. of North Carolina, Inc., Gastonia, N. C., were competing with Piedmont for the Carolina markets. The examiner denied the applications of Carolina Natural and Public Service insofar as they related to serving the markets Piedmont was authorized to supply, but reopened those proceedings to give the companies an opportunity to file amendments to their applications eliminating the communities which Piedmont was authorized to serve.

Exceptions to the examiner's decision were filed by Carolina Natural, Public Service, and the South Carolina Public Service Commission.

Watertown Petition Granted

WASHINGTON.—The Federal Power Commission has granted proposals of New York State Natural Gas Corp., New York City, and Niagara Mohawk Power Corp., Syracuse, N. Y., involving natural-gas service to Watertown and other communities in northeastern New York.

New York State Natural was authorized to make additional sales of gas to Niagara Mohawk, which in turn received authorization to build a 55-mile, 10¾-in. pipe line from Fulton, N. Y., to Watertown. Estimated cost of Niagara Mohawk's project is $1,991,000.

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Among the Drilling Contractors

Seasonal Decline Felt In Active Rotary Rigs

Drilling activity in the United States and Western Canada continued its downward trend during the week ended January 1 following a normal turn-of-the-year pattern. The slackening was reflected in a decrease during that week of 74 in the number of operating rotary rigs. Nearly all areas in the region were affected. Only in the Illinois Basin area was there an increase in activity.

Active rigs during the week totaled 2,406 as compared with 2,480 reported during the preceding week. The number was 115 below the all-time record number of operating rigs reported during the week ended December 11, only 4 weeks previous. However, the year started off with 294 rigs working than at the start of 1950.

ROTARY RIGS IN OPERATION*
(United States and Western Canada)

Area—	Week ended 1-1-51	Change week ended 12-25-50	Change week ended 1-2-50
Gulf Coast	567	— 3	+ 71
W. Tex.-N. M.	790	—23	+ 82
Ark.-N. La.-E. Tex.	154	—14	+ 1
Oklahoma	282	0	+ 39
Kansas-Nebraska	136	—28	+ 15
Illinois-Eastern	119	+ 3	+ 11
Rocky Mountains	111	— 8	+ 32
Pacific Coast	134	0	+ 8
Total United States	2,293	—73	+259
Western Canada	113	— 1	+ 35
Total	2,406	—74	+294

*Courtesy Hughes Tool Co. Trends in drilling activity in the United States as a whole and in the Gulf Coast and Arkansas-North Louisiana-East Texas areas are shown by charts on pages 136 and 137.

Commonwealth Increases Canadian Drilling Work

Commonwealth Drilling Co., Calgary, Canada's largest drilling contractor, has purchased another rotary rig to boost the firm's total to 16. The new unit, an EMSCO GA350-35, was brought into Alberta last year by an American contractor.

Of Commonwealth's 16 rigs, 13 are operating in Alberta, 2 in Saskatchewan, and 1 in British Columbia. Two are in the Redwater field, two in Leduc, two in other Alberta fields, seven on Alberta wildcats, and three on Saskatchewan and British Columbia wildcats.

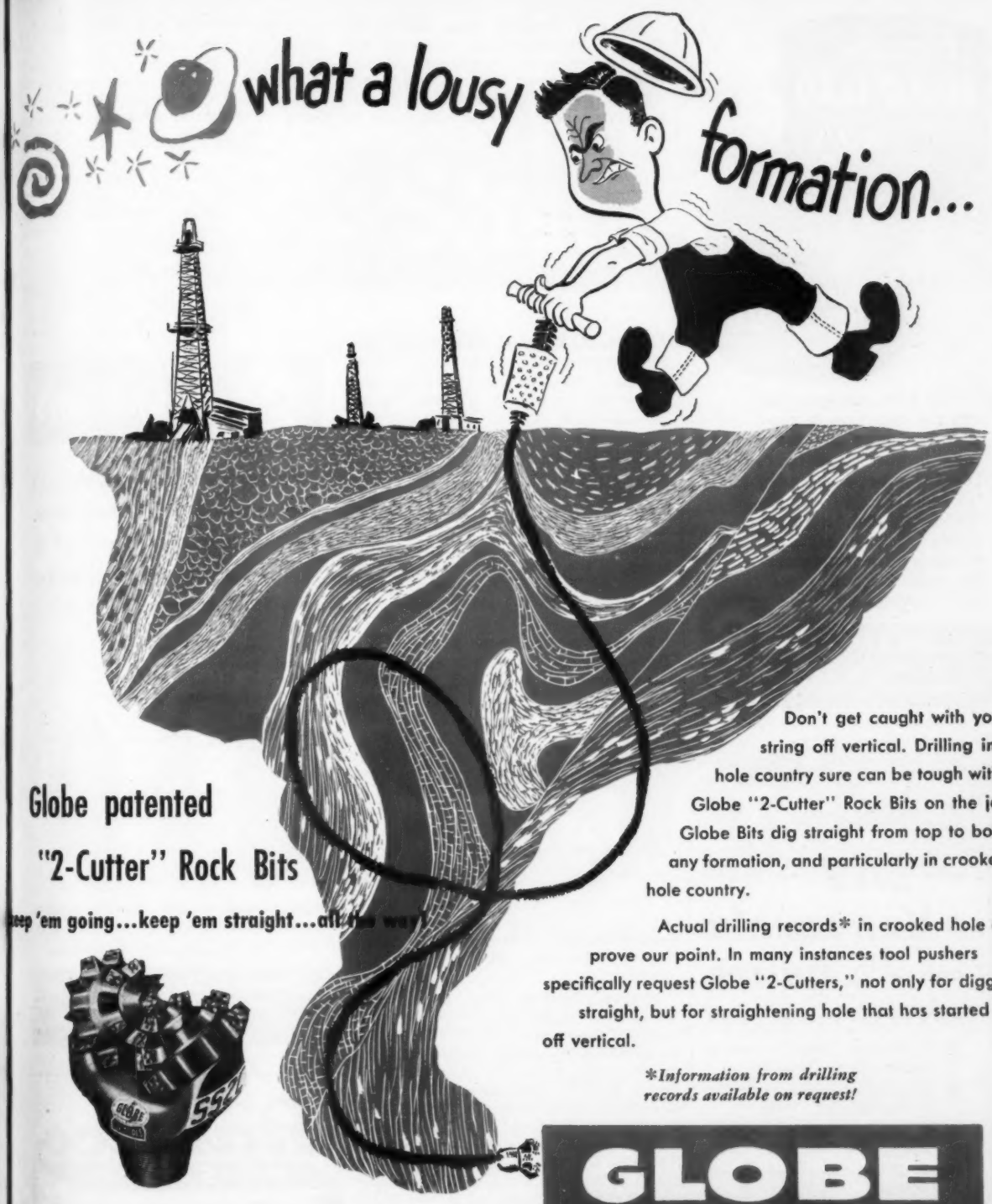
Southeastern Drilling Co., Dallas, is starting a 10,000-ft. wildcat test for Continental Oil Co. at 1 Carroll in the area 4½ miles southwest of the Tennessee Colony townsite in western Anderson County, East Texas.

B. H. Gray, Wichita Falls, Tex., is the contractor on a 4,100-ft. Ellenburger wildcat test being started by Senate Oil Co. in Section 121, Block 3, H&TC Survey, 5 miles southwest of Cisco, Eastland County, North Texas. Test is 1-A Speegle.

Norwood Drilling Co., Wichita Falls, Tex., has contracted with Humble Oil & Refining Co. for a 7,000-ft. Ellenburger test to be drilled at 1 Masterson, in Section 10, Block A, R. M. Thompson Survey, King County, Texas. Location is about 7 miles northeast of the Batesman-Strawn area.

Day-tour crew on a rig which Zephyr Drilling Co., Tulsa, is operating in the Sweetie Peck field, Midland County, West Texas. Left to right: Merrill N. Smith, driller; Carl O. Williams, derrickman; Cecil Robertson, cathead; Leo Ray, racker; and Perry D. Watts, lead tong.

what a lousy formation...



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Mohawk Drilling Co., Oklahoma City, is keeping a rig working for Joe Labowitz and associates in further development in the Coon Creek field in northwestern Oklahoma County, Oklahoma. Current operation is at 5 Conn, SE NE SW 14-14n-1w.

Creighton Drilling Co., Tulsa, is drilling for George W. Deck of Tulsa at 1 Poor, SW SE NW 25-14n-6e, a semiwildcat ¾ mile northwest of nearest production of the Vanderslice gas field, and about a mile northeast of the Peck pool, Lincoln County, Oklahoma.

Loffland Brothers Co., Tulsa, has the contract for a wildcat test which British-American Oil Producing Co. is starting in Banner County, Texas. The location is on the operator's Krantz lease, 18 miles south and east of Harrisburg.

Kingerly Drilling Co., Inc., St. Jo, Tex., has projected a shallow wildcat test for its own account to be located west of Ada, Pontotoc County, Oklahoma, in the SE NE NE 35-4n-5e. The test is 1 Clark, SE NE NE 35-4n-5e. Projected depth is 1,400 ft.

Warren & Bradshaw Drilling Co., Tulsa, has contracts for two additional wells being drilled as offsets to Star Oil Co.'s recently completed discovery well, 1-B Young, in Kent County, Texas. One is for the discovery operator's 1-A Young, a south offset. The other is for a north offset, 1-A Young, being drilled for Seaboard Oil Co.

Empire Drilling Co. is the contractor on a 5,000-ft. wildcat test being started by J. K. Dorrance just east of Miles City, in southwestern Runnels County, Texas. Location is in Section 85, T&NO Survey, on the operator's Coleman lease.

Morton Drilling Co., Tulsa, has taken two additional drilling contracts. One is with W. H. Elson of Tulsa for a Mississippi lime test (approximately 4,100 ft.) in northern Payne County, Oklahoma. The other is with Foundation Oil Co. for a 3,100-test ½ mile north of the Casey pool, Pawnee County. The first is 1 Hesser, NE NW NE 21-20n-3e, southwest of Glencoe. The other is 1-A School land, NE SE SW 16-21n-6e.

W. R. Bowman Drilling Co., Tulsa, has contracted for another well to be drilled for Gulf Production Co. in the Glenn pool, Creek County, Oklahoma. The new well will be 47 Berryhill, SW SE NE 17-17n-12e.

Big Chief Western Drilling Corp., Denver, is starting another test for Stanolind Oil & Gas Co. in the Ignacio area, LaPlata County, Colorado. It is 2-B Ute, SW NE NW 21-33n-7w, about 1¼ miles southeast of 1 Ute, recently completed gas discovery well. The latter produces from the Dakota sand around 7,360 ft. and the Morrison sand at 7,590 ft. after having been drilled to a total depth of 7,919 ft.

Grappe - Denton, Inc., Levelland, Tex., has contracted to drill an Ellenburger wildcat test for G. H. Vaughn 10 miles southwest of Buena Vista, Pecos County, Texas. Location is for 1 Iowa Realty, Section 27, Block 10, H&GN Survey. It is 2 miles north of the Heiner-Ellenburger field.

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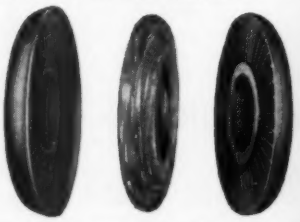

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Exploration and Drilling

West Texas Is Mr. Big

ANY week in the year there are enough important and interesting developments in West Texas to overflow this page. With about one-fourth of the active rotary rigs in the United States operating in West Texas, this area is the activity center of the development and exploration world at the present time. Tremendous reserves are being uncovered. Just how much oil will ultimately be credited to discoveries of the past 2 years is impossible to estimate with any degree of accuracy at this time. Most of the larger discoveries have yet to be laterally defined. Known oil-bearing horizons of secondary importance have not been opened in enough wells to be more than partially evaluated.

Though already accounting for about one-seventh of this nation's production of crude oil, and under sharp restrictions at that, West Texas is a long ways from being thoroughly explored. There are local areas where the Permian sediments have been intensively tested, but they are just the beginning in this thick basin as proved by the results of exploratory efforts in recent years. It has only been since the end of World War II that the deeper horizons have been played with sufficient intensity to begin to develop the enormous reserves that geologists are now confident that they contain. Only in the past couple of years have the older horizons in the deep Midland basin been tapped.

Last week's announcement by Gulf Oil Corp. that plans have been filed with petroleum defense authorities for construction of an urgently needed 26-in. (300,000 bbl. daily) crude-oil pipe line from West Texas producing areas to refineries on the Gulf Coast is but another illustration of the future that informed sources see for this oil-rich region.

Last year was a big year in West Texas. The year started off with Tide Water Associated Oil Co.'s Silurian-Fusselman discovery (Corrigan) in Terry County. This was the first pre-Permian oil to be found in the north end of the Midland basin. Then came the big extensions and connecting areas to Scurry's reef: Cogdell, Reinecke, Salt Creek, the Vealmoors, and others. General American Oil Co. of Texas found Sweetie Peck-Ellenburger field in the depths of the Midland basin, to prove that the enormous Pegasus field was not a freak accumulation but was more likely just a sample of what was to be found in this area. Spots of reefing, still to be fully evaluated, were picked up in Terry County: South Brownfield, Wellman, and Adair-Wolfcamp. Later, Star Oil Co.'s discovery at North Polar in Kent County, the first significant Ellenburger producer on the eastern platform of the Permian basin, was completed.

There were well over 100 discoveries, new pools and new pays, in West Texas last year. But, numbers don't mean much, it's the size of the discoveries that counts. From the limited data available it appears that the average number of barrels discovered per successful wildcat in West Texas last year is ultimately going to be very substantial. Many of the 1950 discoveries have already given indications of particular prominence in the years to come. To mention a few not already named above: Ropes in Hockley County, Parks in Midland, Northwest Wheeler in Winkler, Hulldale in Schleicher, Canning in Borden, and Lloyd in Runnels.

What's going on right now? Plenty. The discoveries of the past 2 years are being developed as rapidly as the deep drilling that many of the fields require will permit. Additional discoveries and major extensions are being added in rapid succession. Here are but two of current interest: Magnolia Petroleum Corp. has just completed a Pennsylvanian well at an offset to its Ellenburger discovery at Parks, Midland County; and C. W. Murchison's 1¾-mile north extension to Pegasus has flowed oil from both the Pennsylvanian and Ellenburger on separate tests.

Next week's issue of the Journal is going to carry a development report on Scurry reef fields which have caused so much excitement for the past 2 years. The development in this second largest oil field ever found in the United States, now past the boom, did more than open in excess of a billion barrels of oil; it opened the eyes of those who believed that all of the giants had already been found. It started a new trend in exploratory thinking—a trend of optimism that knows no bounds.

Philip C. Ingalls.

HIGHLIGHTS OF WEEK'S DEVELOPMENTS

WEST TEXAS.—C. W. Murchison and others 1 Joe Canon has extended production about 2 miles north of Pegasus field, and in both the Pennsylvanian and Ellenburger formations. The Pennsylvanian at 10,465-10,530 ft. yielded 360 bbl. of oil in 8 hours, without acid, and the Ellenburger at 13,110-63 ft. and 13,175-85 ft. flowed 205 bbl. of oil in 8 hours through ⅜-in. choke.

NORTH TEXAS.—First Ellenburger production for Stonewall County has been indicated at F. Kirk Johnson 1-E Leon Anderson, south of the town of Aspermont. Top of the formation was 5,946 ft., and a 2-hour test to 5,951 ft. recovered 4,180 ft. of clean oil. Casing was set on top of the pay, rotary moved off, and completion tests started.

SOUTH LOUISIANA.—Approximately 18 miles offshore from Terrebonne Parish, Magnolia Petroleum Co. B-1 State Lease 768, Ship Shoal Block 87, has been completed for a new oil discovery. Through perforations at 11,036-42 ft., the well flowed 510 bbl. of 37.8°-gravity oil daily through 12/64-in. choke. Total depth is 11,978 ft. and 7-in. pipe is set at 11,850 ft.

ROCKY MOUNTAIN AREA.—Several wildcats are at critical depths in the Denver-Julesburg Basin of Colorado, Wyoming, and Nebraska. Three deep, important wildcat failures were completed in Wyoming. Another oil discovery is near completion in the Dalton area, Cheyenne County, Nebraska. (For details, see field report this week.)

Oklahoma

Deese Sand Well Opens New Love County Pool

WALTER GANT and E. Dunlap are completing their 1 Liddell, NE SW NE 13-7s-2e, northwest of Marietta, Love County, to open East Marietta pool. Flow of this discovery well on final production tests through 16/64-in. choke was gaged at 6 bbl. of clean oil per hour for 15 hours. Pressures registered 200 to 220 psi. on the tubing and 420 psi. on the casing. Prior to the above test the well flowed at the rate of 10 bbl. per hour through 24/64-in. choke. It made 100 bbl. its first hour but this was mostly load oil.

Production is from Deese sand, opposite which casing is perforated at 5,498-5,505 ft. Hole had been drilled to 6,835 ft. and casing run to 6,770 ft. The location is about 2½ miles southeast of the same operators' 1 Reid, SW SW SW 2-7s-2e, completed last October as the discovery well of Northeast Marietta pool. It produces from the same horizon with perforations at 6,024-60 ft.

A new Gibson sand discovery has been made in Garvin County where Superior Oil Co. has completed its 1 McDaniel, C NW SW 15-4n-4w, pumping 70 bbl. of 40.2°-gravity oil per day. The well is in an old hole which had been drilled to 12,549 ft. and abandoned as dry. Hole was redrilled and cleaned out to 8,203 ft. where casing was cemented. Electric log had shown Gibson sand at 8,111-74 ft. Casing is perforated at 8,115-16 ft. for the completion. The well is just south and a little west of the town of Lindsay and about 2 miles northeast of East Lindsay field.

Skinner sand has been found productive by The Texas Co. in its 1 Real Pitts, SE SE NE 30-19n-4e, a wildcat located 7 miles east and 2 miles south of Stillwater, Payne County. The well flowed 60 bbl. of clean oil through ¼-in. choke in 24 hours from that sand, opposite which casing is perforated at 3,644-55 ft. Hole, drilled to 3,949 ft., was plugged back to 3,687 ft. after casing had been run to 3,810 ft. The location is about a mile east of of Northwest Mount Hope pool which produces from Red Fork sand around 3,750 ft.

Mid-Continent Petroleum Corp. has completed its 1 School Land, SE SE SE 29-14n-5e, as a 15-bbl. pumper to open a new Bartlesville sand pool 2 miles southwest of the South Davenport pool, central Lincoln County. Total depth is 4,005 ft. with Bartlesville sand from 3,985 ft.

OKLAHOMA WILDCAT FAILURES

Atoka County: Atoka Oil & Gas 1 McNeil, C SE NW 17-4s-11e, dry, TD 4,042 ft., Mayes 1,231 ft., Hunton 1,756 ft., Sylvan 1,911 ft., Viola 2,092 ft., Simpson 2,487 ft., McLish 3,028 ft., Oil Creek 3,207 ft.

Creek County: Hodge & Co. 1 Abraham, NE NE SE 30-14n-9e, dry, TD 2,797 ft., Checkerboard 1,105 ft., upper Skinner 2,296 ft., lower Skinner 2,351 ft., Verdigris 2,484 ft., Inola 2,701 ft., Bartlesville 2,770 ft.

Kay County: C. R. Colpitt 1 Greenwood, SE NE NE 29-28n-3e, dry, TD 3,540 ft., sand 354 ft. with flow of gas, lime 401 ft. and 430 ft., est. flow of 3,000,000-4,000,000 cu. ft. of gas in sand at 1,882 ft., Layton 2,391 ft., lime 2,666 ft. and 2,709 ft., shale 2,970 ft., lime 2,980 ft. with show of oil, Mississippi chat 3,251 ft., Wilcox 3,531 ft.

Lincoln County: Dirickson-Lewis 1 Thomas, SW SW NE 31-16n-3e, dry, TD 4,895 ft., Oswego 4,179 ft., Inola 4,464 ft., Bartlesville 4,480 ft., Mayes 4,719 ft., Woodford 4,824 ft., Hunton 4,860 ft.

Noble County: Anderson-Prichard 1 Buschmeyer, NE NE SW 20-22n-2w, dry, TD 4,940 ft., Layton 3,984 ft., Oswego 4,455 ft., Skinner 4,778 ft., Mississippian 4,885 ft.

Okfuskee County: Falcon-Seaboard 1 Bakhous, NW NE NE 34-13n-8e, dry, TD 3,590 ft., Checkerboard 1,236 ft., Oswego 2,206 ft., Senora sand 2,452 ft., Inola 2,979 ft., Booch 3,303 ft., Pitkin 3,577 ft.

Berry & Co. 1 Bras, SW SW NE 11-13n-9e, dry, TD 3,100 ft., Bartlesville 2,535 ft., Gilcrease 2,956 ft., Cromwell 3,047 ft., Mississippian 3,075 ft.

Pottawatomie County: Wood Oil 1 Shepard, NE NE SE 10-6n-4e, dry, TD 4,796 ft., Hogshooter 2,380 ft., Layton 2,385 ft., Calvin 3,137 ft., Earlsboro 3,621 ft., Mayes 3,948 ft., Woodford 4,034 ft., Hunton 4,294 ft., Sylvan 4,391 ft., Viola 4,446 ft., dolomite 4,583 ft., Wilcox 4,780 ft.

Troutman 1 Clower, NE NW SW 5-7n-5e, dry, TD 4,469 ft., Wewoka 2,837 ft., upper Calvin 2,961 ft., lower Calvin 3,112 ft., Earlsboro 3,421 ft., Pennsylvanian Caney 3,651 ft., Mississippian Caney 3,682 ft., Mayes 3,850 ft., Woodford 3,952 ft., Hunton 4,151 ft., Sylvan 4,161 ft., Viola 4,238 ft., dolomite 4,286 ft., Wilcox 4,401 ft.

OKLAHOMA SUCCESSFUL WILDCAT

Logan County: Ashland 1 Rouse, NW NW SW 9-19n-4w, pumped 47 bbl. of oil per day from dolomite at 6,292-6,310 ft., TD 6,477 ft., Layton 4,612 ft., Checkerboard 5,176 ft., Oswego 5,327 ft., Mississippian 5,660 ft., Woodford 6,015 ft., Viola 6,182 ft., first Wilcox 6,380 ft., second Wilcox 6,440 ft.

Michigan

Ottawa County Wildcat Has Berea Gas Show

MOUNT PLEASANT. — Leonard Oil Co., Inc., logged 320,000 cu. ft. of gas in the Berea at 1,101-05 ft. at 1 Sneden et al, NE NW NE 23-5n-13w, Jamestown Township wildcat, Ottawa County, but hole was being drilled ahead to the primary objective, the Traverse lime.

Those Michigan crude-oil buyers and pipe-line companies that boosted crude-price postings 12 cents a barrel on December 16 and 22, announced on December 29 that they had reluctantly rescinded and rolled back the 12-cent advance to comply with the request of the ESA that crude prices be held to the December 8, 1950, level.

The Michigan Department of Conservation wrote a total of 901 drilling permits for wells of all classifications during 1950, compared to a total of 999 in 1949. Unofficial records showed that 364 of the past year permits were for wildcat oil and gas tests, the balance were for field wells, while in 1949, when 98 more drilling permits were approved, only 311 were for exploratory holes. The Department announced that permits for GT core holes in 1950 set a new all-time record with a total of 555 permits issued. The previous record for issuance of GT core drill permits was established in 1949 when 454 tests were approved for the drill.

A Dundee oil show in a North Plains Township wildcat, Ionia County, was scheduled to be reacidized after first treatment with 500 gal. at Harley Ferrell's 1 Thomas & Marrion Comm., NE SE NE 10-8n-5w, boosted a small oil show to an average of 4 bbl. every other day, pumping. Dundee top was logged at 2,980 ft. and well is under test at 2,987 ft., total depth.

Only a rainbow show of oil and no water had been logged in the Traverse objective at Clyde B. Miller's 1 Slotman, NE NE NW 27-3n-14w, Heath Township, Allegan County, up to 35 ft. in the lime. The 1 Slotman is the direct south offset to the Dunningville field oil-discovery well. Top of Traverse lime was logged at 1,421 ft. and operations were shut down for orders at 1,456 ft.

MICHIGAN WILDCAT FAILURES

Arenac County, Lincoln Township: Frank E. Roush 1 Kopaczewski, SE SE NW 4-18n-4e, Dundee 2,736 ft., dry, TD 2,952 ft.

Mecosta County, Mecosta Township: Louis Rose 1 Pedowski, NW NW NE 27-14n-10w, Traverse 2,832 ft., dry, TD 2,861 ft.

Montcalm County, Fairplains Township: Mercer Oil Co., Inc. 1 Lawson, NW SE NW 26-9n-7w, Dundee 3,034 ft., dry, TD 3,135 ft.

Ogemaw County, Foster Township: Brazos Oil & Gas Co. BBB-1 State Foster, N½ SE NE 29-24n-1e, dry in Richfield, TD 4,266 ft.

Ottawa County, Zeeland Township: John R. Atha 1 Petroelje, SE SW NE 17-5n-14w, Traverse 1,637 ft., dry, TD 1,672 ft.

California

Operators Start Year With Large Number of Wildcats

LOS ANGELES.—Undismayed by the relatively poor results obtained from their prospecting efforts in 1950, California operators started out this year by staking an unusually large number of wildcats.

Near Arvin in Kern County, The Texas Co. has announced it will drill a 12,000-ft. test on a farmout from Ohio Oil Co. Labeled its No. 1 Kovacevich, site has been set for SW 27-31s-29e, or about 1¼ miles west of oil production in Arvin field.

Also in Kern County, Independent Exploration Co. has staked location for a wildcat in the area between Salt Creek and Bacon Hills. It will be No. 3 Hyde USL. Staked in NW 3-29s-20e, it will be in Carneros Springs area about 5½ miles west of South Belridge field and 2½ miles south of Bacon Hills. On the southeast end of San Joaquin Valley and about 1 mile southeast of Wheeler Ridge production, Hancock Oil Co. has staked location for its No. 61-35 Kern County Land in NE 35-11n-20w.

Near the Cuyama region's newest discovery, the Hancock area in the hills northwest of the valley, Universal Consolidated Oil Co. has staked an important test. Known as its No. 87A Humble it will be located in SE 36-32s-19e or about ⅝ mile southwest of Hancock's successful wildcat which opened production in a 5,800-ft. Miocene sand. A ¾-mile northwest stepout was a failure but the northwest offset is being completed as a pumper.

In Morales field 2½ miles to the southeast, Richfield Oil Corp. completed its south offset to the Superior pool discovery well. This gave the pool its third producer, a 150-bbl. flowing well. A mile south of here, in NW 14-11n-28w, Richfield abandoned its 31-14 Joice-B. Drilled to a total depth of 4,742 ft., only drilling fluid was recovered on a formation test at 3,937-4,040 ft.

Monterey County's San Ardo field, which in the past 2 months has seen a revival of drilling activity following advances in low-gravity crude prices, was given a 3-mile eastern wildcat. It was Standard Oil Co. of California No. 85-9 Alexander, in SE 9-23s-11e. Also near the coast, in Santa Barbara County's Carpinteria area, Imperial Gypsum & Oil Corp. will drill its No. 1 Bailard in Section 34-4n-25w.

In the Los Angeles region, a wildcat was staked by Superior Oil Co. in the Saugus area of Los Angeles County. The wildcat will be its No. 14-23 Bonelli and will be drilled in Section 23-4n-16w. It will be about ¾ mile east of an unsuccessful 9,735-ft. test drilled about a year ago. This wildcat, Lytle Exploration Co. No. 1 N.L.F., topped the Pico at 6,380 ft., the Miocene at 7,800 ft., Mohnian at 8,880 ft., and the Conglomerate at 9,400 ft.

South of the Dominguez field, in Section 5-4s-13w, D. D. Dunlap has abandoned 1 Del Amo-Bell at 7,973 ft. The wildcat topped the Repetto at 4,100 ft. and the Miocene at 6,380 ft.

CALIFORNIA WILDCAT FAILURES

Kern County, Santos Creek area: Independent Exploration Co. 1 Santos, 32-28s-20e,

dry, top Buttonbed 1,708 ft., top Carneros 2,173 ft., TD 3,137 ft., elev. 1,182 ft.

Los Angeles County, south Dominguez area: D. D. & Dorothy Dunlap 1 Del Amo-Bell, 5-4s-13w, dry, top Repetto 4,110 ft., top Miocene 6,380 ft., TD 7,973 ft., elev. 22 ft.

Loma Verde area: Superior Oil Co. 51-28 Romero, 28-5n-17w, dry, TD 7,925 ft., elev. 2,440 ft.

Riverside County, Corona area: V O D Oil Co., Inc. 1 Berghofer, 29-4s-6w, dry, TD 1,620 ft.

San Luis Obispo County, south Morales area: Richfield Oil Corp. 31-14 Joice B, 14-11n-28w, dry, TD 4,742 ft., elev. 2,675 ft.

Santa Barbara County, Tepusquet area: Honolulu Oil Corp 1 Rancho Suey, 21-10n-32w, dry, TD 5,022 ft.

Ventura County, Calabasas area: Leroy C. Gould 1 Palo Comado, 14-1n-18w, dry, TD 2,334 ft., elev. 1,220 ft.

Permian Basin

Ellenburger Offset Produces from Pennsylvanian

MIDLAND. — Magnolia Petroleum Co. 1 H. S. Collings, semiwildcat and north offset to the company's Parks Ellenburger discovery in Midland County, was plugged back and completed from the Pennsylvanian.

The 1 Collings was drilled to the Ellenburger, which carried oil but considerable water. According to field sources, the 2 Parks well has been making additional water.

Perforations in the Pennsylvanian at 10,375-395 and 10,400-442 ft. did not produce a flow and operators swabbed mud and oil for 6 hours. At that time it kicked off and flowed drilling mud for several hours, then the hole was loaded with 180 bbl. oil, which flowed out in 11½ hours through ¾-in. choke.

After the load oil had been recovered the well was put on production test through 40/64-in. choke, gaging 200 bbl. of new, 44.5°-gravity oil in 6 hours. Gas-oil ratio was around 1,800 cu. ft. and flowing tubing pressure was 100 psi. On 24-hour potential test, and through 28/64-in. choke, the well completed for 567 bbl. of oil, with gas-oil ratio of 1,725 cu. ft.

Southwest of Midland, Ralph Lowe 1 Hill was drilling ahead below 12,603 ft. following a 3-hour drill-stem test in the Fusselman section from 12,465-588 ft. Recovery was 530 ft. of gas-cut mud and 40 ft. of salt water. The well previously indicated production from the Dean sand and the Wolfcamp.

Ted Weiner 1 Driver, Midland Spraberry test 7 miles south of Tex Harvey Spraberry field, reported a flow of 20 bbl. of oil in 2 hours from sand between casing at 7,110 ft. and total depth at 7,325 ft.

In southeastern Martin County, north of Tex Harvey area of Midland County, Plymouth Oil Co. 1 Jeff Davis prepared to drill-stem test in the Spraberry after coring fine, silty, gray sand with scattered oil shows from 6,855-64 ft. Top of the sand has been picked at 6,800 ft.

Penntex Oil Corp. has filed application to deepen to the Ellenburger at its 1 Kribbs, 338-97-H&TC, a northwest edge well in the Kelly-Snyder field. The well was completed last April from Canyon reef at 6,780-6,850 ft. and rated a daily flowing potential of 888 bbl. of oil a day. Total depth was 6,850 ft., which was just above the water table when drilled. Top of the reef was 6,651 ft. or minus 4,251 ft.

Completion from the Canyon reef limestone was to be attempted at Continental Oil Co. 2 Swenson Land & Cattle Co., northeastern Garza County wildcat which was drilled to 8,150 ft. in the Ellenburger. The lower formation carried sulfur water and operators plugged back to 7,500 ft. While

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drilling, the Canyon section between 6,832-87 ft. indicated possible production.

Sinclair Oil & Gas Co. 1 McElroy Ranch Co., Upton wildcat 2½ miles southeast of the one-well Wilshire Wolfcamp pool, developed a flow of 56 bbl. of oil an hour on a drill-stem test from 9,376-9,411 ft. The section has been identified as Wolfcamp and not Pennsylvanian as first reported. Drilling continued below 9,678 ft., in limestone, with samples between 9,560-9,600 ft. showing oil in lime.

South of the Benedum area, Cities Service Oil Co. and Continental Oil Co. 1-AH University, Upton County Spraberry and Ellenburger prospect, was drilling below 11,144 ft. in dolomite following a drill-stem test from 11,046-141 ft. Recovery was water blanket and 70 ft. of drilling mud in 1¾ hours.

In Howard County, Norman & Roche 1 Martin, 7 miles north of Coahoma, recovered 1,260 ft. of oil and gas-cut mud on a 2¼-hour drill-stem test of the Mississippian from 8,940-56 ft. Top of the lime was 8,845 ft. It was to drill ahead.

The Texas Co. has announced plans to drill a one-location northwest offset to Ralph Lowe 1 Hill, probable Permian discovery in Midland County. The new test is to be the 1-D Clarence Scharbauer in 19-39-T2S-T&P. Contract depth was to be determined after the Lowe test has probed the lower formations.

In southeast Crane County, Placid Oil Co. completed its 1 A. R. Eppenaur as a discovery from the San Andres. Completion potential was 134 bbl. of 38°-gravity oil a day, flowing through ⅜-in. choke from perforations at 2,710-30 ft. Total depth was 3,001 ft. There was no water and potential was over a full 24-hour test.

Humble Oil & Refining Co. 1 Hallie Day, Crane County Devonian test, swabbed 24 bbl. of new oil in 3 hours from perforations at 8,606-16 ft. after treating with 1,000 and 2,000 gal. of acid. Following that, it was shut in 1 hour, then flowed 60 bbl. of fluid cut 3 per cent by acid water and 2 per cent basic sediment, in 9 hours. The flow was through open 2-in. tubing. Operators were to reperforate and test at 8,580-96 ft.

Humble 1 Bryant Hulse, ¼-mile offset to the discovery of West Anton Clear Fork field of Hockley County, reported shows of oil and gas in that formation which checked high to the discovery. Drill-stem test in the 1 Bryant Hulse from 6,602-40 ft., open 2 hours, recovered 97 ft. of heavily gas-cut mud and 700 ft. of oil-cut mud, said to be 60 per cent oil. There was no water. Humble's 1 Hobgood, discovery well, completed on the pump from pay at 6,655-75 ft.

In the new Germania field of Midland County, James H. Snowden 2-7 Andrew Fasken completed for a ⅜-mile northeast extension to the Spraberry sand field. Total depth was 7,200 ft., still in the sand topped at 7,138 ft. Casing was run to 7,129 ft. and the sections from 7,140-60, 7,164-84 ft. treated with Hydrafrac. Completion potential was 335.2 bbl. of 37.5°-gravity oil a day, plus some sediment, flowing through 20/64-in. choke. Gas-oil ratio was 606 cu. ft. Snowden staked a diagonal northeast offset to the extension, to be the 1-5 Fasken.

SOUTHEASTERN NEW MEXICO

HOBBS. — Amerada Petroleum Corp. 2 J. T. Caudle, Lea County wildcat in 3-12s-33e, was drilling ahead in lime below 10,917 ft. The Bagley-Highstower area outpost recovered 420 ft. of 51°-gravity oil and made a flow of gas estimated at 1,628,000 cu. ft. daily on a drill-stem test from 9.764-9,830 ft.

McAlester Fuel Co. 1 Lulac Simpson, wildcat in 26-12s-37e, sonthwest outpost to the 1-A Brownfield, discovery, was drilling lime below 9,800 ft. Drill-stem test at 9,585-9,623 ft. yielded 930 ft. of oil and gas-cut mud, plus 60 ft. of sulfur water.

Tide Water Associated Oil Co. 1-D State, 32-16s-37e, east stepout to Lovington field, was drilling below 10,608 ft.

Magnolia Petroleum Co. has staked location for a ¼-mile northeast offset to its 1-B O'Brien, recently completed Devonian discovery. The offset is to be 1 State-Jackson and permit was to 7,400 ft., sufficient depth to test the pay section found in the 1-B O'Brien.

Ohio Oil Co. 3 Denton, indicated extension to the Denton field of Chaves County, was coring ahead below 11,721 ft. in Devonian limestone. The well has recovered oil on drill-stem tests at 11,275-405 and 11,638-71 ft.

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Kansas

Pawnee County Wildcat Shows Oil in Arbuckle

DEEPENED from the Lansing section where it found promising oil and gas showings, Stanolind Oil & Gas Co. 1 Evers, NE NW NE 1-22-16, a rank wildcat 3 miles east of Larned, Pawnee County, has additional prospects of production in the Arbuckle.

The latter zone was marked at 3,914 ft. (—1,936 ft.). At latest report, hole was drilling past 3,952 ft. after a series of drill-stem tests of various levels. Tests in the section down to 3,938 ft. showed mostly gas with flows estimated at 2,000,000 to 3,000,000 cu. ft. per day being recorded. A 30-minute test of an interval at 3,938 ft., however, yielded 270 ft. of free oil with an additional 30 ft. of oil-cut mud. Gravity of the oil was 35°. Indicated bottom-hole pressure was 1,200 psi. The next interval tested at 3,948-52 ft. got sulfur water.

Location of the well is more than 5 miles from nearest oil production although some gas is produced in the Torrance area, 2 miles to the north.

J. W. Bird is opening another new pool in northwestern Stafford County, an area where at least five other oil discoveries have been made within the past year. His 1 Wright, NE NE NE 14-21-14, filled 3,050 ft. with fluid, of which 2,055 ft. was oil, when plug was drilled out to test Arbuckle lime, topped at 3,695 ft. (—1,770 ft.). Swabbing tests are now under way, preparatory to completion in that zone. Total depth is 3,699 ft. with hole open below 3,696 ft. The well also is a prospective producer in Lansing lime, topped at 3,367 ft., and in which a drill-stem test, previously reported, at 3,481-91 ft., got 330 ft. of oil and 60 ft. of oil-cut mud. Location is about a mile northwest of the McGinty pool.

Another new pool, or a ¾-mile southward extension of the Berland pool, southwestern Rooks County, is virtually assured by Lohmann-Johnson Drilling Co. at its 1 Schontholer, NE NE NW 31-10-19. Testing the Lansing section, opposite which casing was perforated at several intervals from 3,480 ft. to 3,619 ft., the well swabbed 45 bbl of oil in 5 hours. Top of the section is 3,442 ft. (—1,246 ft.). The well previously had tested water in the Arbuckle, topped at 3,751 ft. (—1,555 ft.) and drilled to 3,767 ft.

KANSAS SUCCESSFUL WILDCATS

Barton County: Petroleum, Inc. 1 Benjamin, NE SE SW 31-20s-13w, pumped 390 bbl. of oil per day from Arbuckle at 3,542-43 ft., TD 3,592 ft.

Morris County: Loriaux 1 Gross, NE NE SE 35-16s-5e, pumped 60 bbl. of oil per day from Mississippian zone topped at 2,211 ft.

Stafford County: Anschutz Drilling 1 Langer, SE SE NE 4-21s-14w, pumped 607 bbl. of oil per day from Arbuckle topped at 3,578 ft., TD 3,582 ft.

KANSAS WILDCAT FAILURES

Ellis County: Rine Drilling 1 Ubert, NW NE SE 26-12s-19w, dry, TD 3,935 ft., anhydrite 1,520 ft., Topeka 3,226 ft., Heebner 3,422 ft., Lansing 3,463 ft., Arbuckle 3,905 ft.

Ford County: Transwestern Oil 1 Hines, SE SE SW 5-25s-22w, dry, TD 4,785 ft., Heebner 3,953 ft., Lansing 4,090 ft., Mississippian 4,775 ft.

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Graham County: Veeder Supply 1 Berland, NW NE NE 13-7s-21w, dry, TD 3,625 ft., anhydrite 1,675 ft., Topeka 3,045 ft., Heebner 3,292 ft., Lansing 3,318 ft., Arbuckle 3,591 ft.

Harper County: Wakefield et al 1 Muir, SE SE SE 28-31s-9w, dry, TD 4,505 ft., Douglas 3,633 ft., Mississippian 4,408 ft.

Pawnee County: Murfin Drilling 1 Woelk, SW SW NE 25-21s-15w, dry, TD 3,885 ft., anhydrite 900 ft., Heebner 3,314 ft., Lansing 3,435 ft., Viola 3,719 ft., Simpson 3,758 ft., Arbuckle 3,810 ft.

Rooks County: Sohio 1 Gaverts, NW NW NW 22-10s-18w, dry, TD 3,849 ft., Heebner 3,386 ft., Lansing 3,424 ft., Simpson 3,742 ft., Arbuckle 3,799 ft.

Canadian Fields

Development Planned for Kavanaugh-Ireton Area

CALGARY.—Okalta Oils, Ltd., Calgary independent, plans to start development drilling on its holdings in the Kavanaugh-Ireton area southwest of Leduc McLeod oil pool. The company plans to start a new operation 1¼ miles southeast of D2 Devonian production as soon as its rig has completed at the current 14 Okalta-Leduc. The independent's next well will be 1 Oklata-Kavanaugh, in LSD 5, 3-49-25w4, 1¼ miles from the Kavanaugh discovery and 2½ miles northeast of 1 York-Leduc which indicated commercial oil production a few days ago. It is reported that the York well has around 80 ft. of D2 above the water line and appears to be a better well than 1 Okalta-Ireton producer.

Okalta holds development rights on the quarter section where its 1 Kavanaugh site is staked, has three more undrilled locations on the quarter section where 1 Ireton is located, and holds three quarter sections near the York well.

Legion Oils, Ltd., Calgary independent, has indicated oil success at its second venture on an 80-acre farmout from the Pacific Petroleums Group, in the northwest section of Redwater. During drill-stem test well gave a substantial recovery of oil, and production casing now has been set. The well, 3 Legion Oils, in LSD 7, 19-58-22w4, is located ¼ mile west of 2 Legion, oil well, and ⅜ mile northwest of 1-19F C.A.P.P. failure. A 1-hour drill-stem test at the 3 well, of interval 3,241-65 ft., gave a small gas blow plus a pipe recovery of 2,220 ft. of oil. The hole was carried down to 3,290 ft. and 7-in. production casing was set at bottom.

Electrical power line is now being extended ¾ of a mile from Barons town to the Barons oil discovery in southern Alberta and will permit powered pumping operation at the well in the next few days. Meanwhile, a detailed seismograph study of the Barons area will be started later this week, in an effort to obtain sufficient data on the subsurface to permit selection of leases from the 39,580 acres of Crown Exploration Reservation on which the discovery well was drilled. Follow-up drilling will get under way as soon as lease selection is made.

The 1 Barons well operated for the first time last month, and on experimental flow tests produced 1,405 bbl. of 34.5°-gravity crude oil. Of this production, 1,157 bbl. wer trucked during December to the Gas & Oil Refinery in Turner Valley. The well is capable of flowing under its own power at rates between 150-400 bbl. daily through various size chokes, but choked off in attempts to flow through small diameter openings at rates below 100 bbl. daily. It was decided to place the well on pump for steady production.

CANADIAN WILDCAT FAILURES

B.A-Bocock-Withers 1, LSD 3, 33-54-25w4, TD 3,829 ft.

Basin-Norway 1, LSD 15, 7-45-21w4, TD 4,907 ft.

Nielson-Madresfield 1, LSD 10, 35-48-2w4, TD 1,986 ft.

Amerada-C.P.R.-AF 43-35, LSD 2, 34-48-17w4, TD 4,410 ft.

CANADIAN SUCCESSFUL WILDCAT

Albercan-Sun-Sibbald 1, LSD 15, 5-28-2w4, IP 6,000,000 cu. ft. of natural gas daily.

Texas Gulf Coast

Bee County Wildcat Showing Oil on Test

HOUSTON.—The Texas Co. has squeezed perforations at 8,474-84 ft. and perforated at 8,064-72 ft. at 1 Sallie Ragsdale, A. J. Davis Survey, Abstract 155, prospective discovery in Bee County. Through the latter perforations, the well was tested for 78 bbl. of 29.8°-gravity oil in 24 hours. Tubing pressure was 1,975 psi.

On the north flank of Pierre Junction Dome, Harris County, Albert Plummer 4 Kate F. Whitehead has been finaled for a new oil pay in the field. The well is at total depth of 5,545 ft. and operator set 5½-in. casing at 5,540 ft. Through perforations at 5,456-62 ft., the well flowed 142 bbl. of 36.3°-gravity oil daily through ⅛-in. choke. Tubing pressure was 1,125 psi. and casing pressure 1,300 psi.

New pay has been opened in Sour Lake field, Hardin County, at Chance Drilling Co. 4 Colby-Simms. The well flowed at the rate of 176 bbl. of 38.6°-gravity oil daily with 670 psi. tubing pressure. Tubing was perforated at 4,426-50 and 4,456-64 ft. Through casing perforations at 4,304-28 ft., the well was potentialed for 212 bbl. of 30.5°-gravity oil daily. Casing pressure was 1,075 ft.

Operations have been resumed at a Grimes County prospective discovery. Annava Corp. 1 Herbert Youens, J. B. McNealy Survey, is at total depth of 9,321 ft. with 7-in. casing set at 9,298 ft. Electric log and side-wall cores are reported to have confirmed good shows in a sand section at 9,040-60 ft. and at 9,230-50 ft. Top of the Wilcox is reported at 5,260 ft. Operators are preparing to perforate for production tests.

In Orange County, Union Producing Co. 1 Brown is drilling below 8,100 ft. after running drill-stem tests from 7,950-60 ft. Good gas and condensate recovery was reported on the tests. The well is located in I&GN RR Co. Survey, A-224, 2½ miles northeast of Doty.

TEXAS GULF COAST (DISTRICTS 2 AND 3) SUCCESSFUL WILDCATS

Harris County: New pay at Pierce Junction—Albert Plummer 4 Kate F. Whitehead, James Hamilton Sur., TD 5,515 ft., top sand 5,448 ft., perf. 5,456-62 ft., IP: 142 bbl. oil per day, ⅛-in. choke, TP 1,125 psi., CP 1,300 psi., 36.3° gravity.

Harris County: New pay at Durkee—Union Producing Co. 1 Settegast, H&TC RR Sur. 12, A-1168, TD 7,792 ft., top pay 7,052 ft., perf. Yegua 7,053-55 ft., IP: 180 bbl. oil per day, ⅛-in. choke, TP 1,200 psi., 33.1° gravity.

Liberty County: New pay at North Dayton—The Texas Co. 4 J. D. Williams, H&TC Sec. 123, TD 5,050 ft., top pay 4,993 ft., completed from open hole at 5,041-50 ft., IP: 211 bbl., 10/64-in. choke, TP 650 psi., 32.2° gravity.

Wharton County: New pay at Hutchins Kubela—Henry C. Adams 2 J. F. Kubela Estate, H&TC Sur., Sec. 4, A-660, TD 4,664 ft., top pay 4,656 ft., perf. 4,659-63 ft., IP: 132 bbl., ⅛-in. choke, TP 1,800 psi., CP 970 psi., 24.4° gravity.

TEXAS GULF COAST (DISTRICTS 2 AND 3) WILDCAT FAILURES

Bee County: Ginther - Warren - Ginther 1 Mrs. Clara W. Ray, Bee County School Land Sur., A-87, 4 mi. SE of Beeville, dry, TD 4,322 ft.

Newman Bros. Drilling Co. 1 Chas. Mengers, G. Garcia Sur., A-167, 2 mi. NW of Tynan, dry, TD 4,820 ft.

Jackson County: Alcoa Mining Co.-Crown Central Petroleum Corp. 1 State Tract 205, in Carancahua Bay, dry, TD 8,993 ft.

Refugio County: Union Oil Co. of California 2 J. J. O'Brien, Refugio Town tract, A-345, 1 mi. E of Refugio, dry, TD 3,448 ft.

San Jacinto County: Houston Oil Co. of Texas et al., 1 Harry B. Sims, et al., H&TC Sec. 89, A-171, dry, TD 6,624 ft.

Tyler County: Nebo Oil Co. 1 Mrs. Ethyl L. Sawyer, T. Beatty Sur., A-98, 3 mi. NW of Hillister, dry, TD 9,500 ft.

Wharton County: R. L. Wheelock 1 Carville & Humphreys, A. T. Smith Sur., A-555, dry, TD 8,100 ft.

Southwest Texas

Edwards Lime Tests Oil at Atascosa County Wildcat

CORPUS CHRISTI.—Testing operations continue at Lone Star Gas Producing Co.'s new Edwards lime strike in Atascosa County. The company's 1 Sarah Ferry, I&GN Survey, Sec. 1699, Abstract 431, 210 bbl. of 33°-gravity oil during a recent 20-hour test. Flow was through a ⅜-in. choke. The formation, at 8,208-30 ft., has been treated in two stages, one for 300 gal. and the latter for 1,000 gal. After the operator recorded the flow, the well died. Testing will continue until a suitable gage has been recorded.

New gas pay and an extension to Edinburg field, Hidalgo County, has been completed at Magnolia Petroleum Co. 1 Julia Gannaway. Through perforations at 7,788-98 ft., the well flowed 8,500,000 cu. ft. of gas per day on open flow gage. Shut-in pressure was 2,956 psi. The well also made an unestimated amount of 47.6°-gravity condensate. The new producer is located in Lot 3 of the Texas-Mexico Railroad Survey 273, and extends the field 1¼ miles to the north.

First Wilcox production has been opened in Eagle Hill field of Duval County at Ralph E. Fair-Woodware & Co. 1 J. R. Foster Unit. On drill-stem test through perforations at 7,116-30 ft., and 7,154-70 ft., the well flowed 1,800,000 cu. ft. of gas per day through ¼-in. choke. Stabilized flowing pressures was 1,975 psi. On an open flow gage, the well flowed from 5,000,000 to 6,000,000 cu. ft. of gas. The new pay opener is located in Charles Adami Survey 206, Abstract 1641, 10 miles north of Freer.

Delhi Oil Corp. 1 D. W. Rhode, Trustee, McMullen County, wildcat 4½ miles north of Brazil, has been completed as a gas-distillate discovery and is shut in waiting on potential test. Through perforations at 7,311-20 ft., the well flowed gas and distillate through ⅞-in. choke. Location is in the F. M. Drake Survey 78.

SOUTHWEST TEXAS (DISTRICTS 1 AND 4) SUCCESSFUL WILDCATS

Hidalgo County: New pay at Edinburg, Magnolia Petroleum Co. 1 Julia Gannaway, Lot 3, Tex-Mex RR Sur. 27e, ½ mi. NW of Edinburg field, TD 8,280 ft., perf. 6,095-6,102 ft., IP 10 bbl. oil per gas per day on open flow.

Jim Wells County: New pay at Amargosa, George W. Graham A-2 Lester Moore, J. Poitevent Sur. 97, A-185, TD 6,808 ft., ptrf. 6,095-6,102 ft., IP 10 bbl. oil per day on pump, 45° gravity.

SOUTHWEST TEXAS (DISTRICTS 1 AND 4) WILDCAT FAILURES

Jim Hogg County: Gorman & DeLange 1 W. H. Yeager, Jr., Sur. 164, 6 mi. W of Hebbronville, dry, TD 3,531 ft.

O. W. Killam 1 Vela, Block 6, Share 5, El Peyote Grant, 17 mi. S of Mirando City, dry, TD 3,902 ft.

LaSalle County: Siznod Oil Corp. 1 M. L.

Girard, Sec. 7, Robert Crawford Sur., A-1,133, dry, TD 6,511 ft.

San Patricio County: H. R. Smith and F. William Carr 1 Gussie Ragsdale et al, S. S. Gillette Sur., A-400, 1 mi. N of White Point gas field, dry, TD 5,815 ft. Baldridge & King, Inc. 11 Slick Estate, El Panal Grant, 4 mi. E of Rincon field, dry, TD 8,510 ft.

Wilson County: G. N. McNab 1 Frank Teltschik, Louis Menchaca Sur., A-18, dry, TD 3,510 ft.

North Central Texas

Another Canyon Prospect For Stonewall County

WICHITA FALLS.—Southeastern Stonewall County had another Canyon sand discovery in prospect, or a major extension to recent discoveries, at Skelly Oil Co. 1 Williams Flowers, 54-D-H&TC, 5 miles southeast of the town of Aspermont.

Drill-stem test in the sand from 4,110-89 ft., open 2 hours and 40 minutes, had gas at the surface in 3 minutes, mud in 12, and oil in 14. It was cleaned into tanks for 6 minutes, ungaged, then tested into tanks where it made 44.08 and 44.66 bbl. of oil the first and second hours, and 13.44 bbl. the last 20 minutes.

Oil unloaded while coming out of the hole, to make a total recovery of 111 bbl., plus 540 ft. of oil and 30 ft. of heavily oil and gas-cut mud in the drill stem. There was no water. Flowing pressure was 1,025 psi., and 30-minute shut-in pressure registered 1,610 psi. The well was originally scheduled to 6,500 ft. to test the Ellenburger and operators were waiting on orders for completion in the sand, or to drill ahead.

DeSoto Oil Co. 1 J. C. Guest, 91-D-H&TC, about 4 miles west of the 1 Flowers, had water in the Ellenburger in drilling to 6,398 ft. and was plugged back to 5,650 ft. for completion in the Canyon sand.

While drilling, the 1 Guest had yielded 200 ft. of clean oil on drill-stem test between 4,537-51 ft. Operators perforated casing from 4,549-62 ft. after plugging back and were running tubing for a flow test.

Stonewall County, over the past several months, has received a major share of exploration and drilling work. Two new Ellenburger tests announced this week were: Southern Minerals Corp. and Seaboard Oil Co. 1 Yakey, a 6,500-ft. wildcat in the Thomas J. Jordan Survey, and 4 miles north of Old Glory. Location is 3½ miles south of the Old Glory Bend conglomerate field. Six miles northwest of DeSoto 1 Guest, F. Kirk Johnson of Fort Worth staked location for 1 B. B. Clark, to be a 6,500-ft. test in 232-D-H&TC.

Successful completion of a Clay County wildcat in Caddo limestone, 2 miles southwest of a Caddo area but separated by dry holes, has been made at Fred M. Manning, Inc. 1 Sanzenbacher. The discovery pumped 62 bbl. of oil in 24 hours from perforations at 5,855-75 ft. after treating with 1,000 gal. of acid.

Gulf Oil Corp. 2 A. R. Dillard, confirmation test and southwest offset to the Mule Shoe Mississippian field of west-central Clay County, recovered 15 ft. of drilling mud on a 1-hour test in the top of the Mississippian from 5,929-72 ft. Drilling continued below 5,980 ft.

Drill-stem tests in the Caddo at the 2 Dillard recovered some gas at 5,666-5,728 ft. and from 5,728-5,800 ft. The latter section had 900 ft. of gas in the pipe and 25 ft. of slightly gas-cut mud. Drill site is 2,000 ft. from the discovery well.

Location has been reported for a new wildcat in the extreme southwest corner of Knox County. T. D. Humphrey and Humble Oil & Refining Co. plan to drill 1 Mary A. Bush, E. Boren Survey 51, A-27, to 6,100 ft.

Baylor County gained an Ellenburger test at Helmerich & Payne, Inc. 1 C. B. Dunn, located in Block 2464, TE&L Survey, 5 miles southeast of the Rendham field. Contract depth is 5,800 ft.

In Jack County, Robert S. Lytle 2 W. B. Stephens was located in the J. D. Goodman Survey, 10 miles northeast of Jacksboro. Drill site is a north stepout from the 1 Stephens, which topped pay at 5,070 ft.

Young County received a 5,000-ft. exploration at L. T. Burns 1 B. Lawry "A," 3½ miles west of the town of Jean, in the TE&L Survey 291.

Sid Katz and R. H. Venable have staked locations for two offsets to their 1 Dozier, northeast Stonewall County wildcat nearing completion as a Strawn discovery. The 2 Dozier is to be 720 ft. southeast of the discovery, and the 1 R. H. Underwood, is to be 720 ft. northwest of the 2 Dozier. Both operations are in the Ruthy Campbell Survey. The 1 Dozier, discovery, had been shut in for storage at last report, after flowing at the rate of 8-10 bbl. of 37°-gravity oil an hour from 4,822-34 ft., and through 14/64-in. choke.

Throckmorton County's first discovery in the new year was reported as Drilling & Exchange Co., Inc. 1 Richardson Trust, Block 269, BBB&C Survey, 12 miles north of Throckmorton. The new wells completed for a flowing potential of 214 bbl. of 40°-gravity oil a day from the lower Caddo limestone at 4,526-52 ft. The well marks a 1½-mile extension to the same pay discovered by Manning-Richardson.

In southwest Throckmorton County, Cities Service Oil Co. and Sinclair Oil & Gas Co. 2-170 SMS Ranch, a southwest offset to the SMS 170 Caddo field discovery and confirmation test, topped the Manning Strawn sand at 4,111 ft. A core from 4,112-24 ft. recovered 3½ ft. of sand with oil odor and 6½ ft. of sand with no odor

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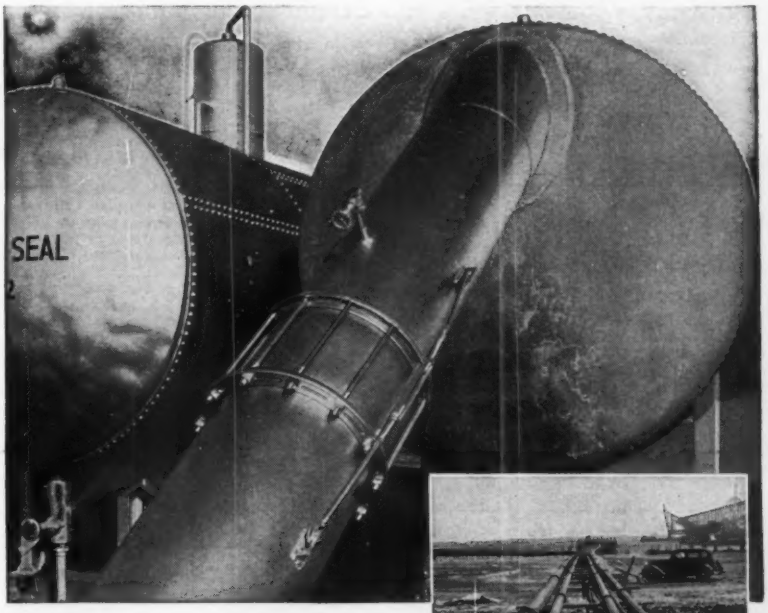

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or fluorescence. Drilling continued below 4,176 ft.

The Texas Co. 1 W. V. Young, southwest offset to the discovery of the Bowie Viola lime field of southwestern Montague County, had additional shows of oil in that formation. A 2-hour test from 6,715-23 ft. had gas in 17 minutes and recovered 250 ft. of clean oil, plus 20 ft. of oil-cut mud. A later test to 6,733 ft., total depth, had gas at the surface in 9 minutes and the tool was closed at the end of 2 hours. Recovery had not been reported.

In Fisher County, Lion Oil Co. 1 Huddleston, wildcat 6 miles southeast of Longworth, prepared to drill plug after running casing to 5,825 ft. The hole was plugged back to the Mississippian after reaching total depth of 5,941 ft. and the pre-Cambrian.

In Young County, Netex Oil & Gas Co. and Warren Oil Corp. 1 B. W. King completed for flowing production as a Strawn discovery, or extension well to a multiple-pay area, and the same operators' second well and offset was already in the pay formation.

The new well made completion potential of 125 bbl. of 42°-gravity oil a day, flowing through 16/64-in. choke, from pay topped at 3,108 ft., drilled to 3,123 ft. Gas-oil ratio was 277 cu. ft. and flowing pressures were 125 psi. on tubing and 430 psi. on casing. The offset and probable confirmation test is the 1-B King, west of the discovery, which recovered 96 bbl. of oil on a test from 3,120-35 ft. The two wells are 1½ miles northeast of Burng-Ragland field.

Appalachian Field

Good Gas Show Reported For Maryland Well

PITTSBURGH.—In Garrett County, Maryland, Eberly & Snee 1 Camp Meeting Holiness Association topped the chert at 3,645 ft. and at 3,657 ft. encountered a flow of gas gaging 1,000,000 cu. ft. and shut down; No. 1 E. O'Donnell reached the chert at 3,280 ft. and is drilling at 3,301 ft.; George L. Yaste, No. 1 Grimes is shut down at 3,174 ft.

In Tolcott district, Summers County, West Virginia, Godfrey L. Cabot, Inc. 1-1330 S. H. Pence, wildcat, elevation 1,798 ft., was completed at a depth of 3,140 ft., resulting in a dry hole. In Steele district, Wood County, a new location has been made north of the Limestone Hill area, Godfrey L. Cabot, Inc. 1-1345 Sarah E. Singledecker, elevation 886 ft., Belleville Quadrangle, 5.3 miles south of Lat. 39°, 10′ and 1.6 miles west of Long. 81, 30′.

Eight new locations in West Virginia were reported during the past week. In North Central Pannsylvania, Pipe Line Construction Co. has located No. 2 State of Pennsylvania Lands, Tract No. 6, in Leidy Township, Clinton County, on the Hammersley Fork Quadrangle.

One new location was reported in southwest Pennsylvania in Boggs Township, Armstrong County.

WEST VIRGINIA WILDCAT FAILURE

Summers County, Toole district: Godfrey L. Cabot, Inc. 1-1330 S. H. Pence, elevation 1,798 ft., dry, TD 3,140 ft.

Ohio Fields

Sandyville Gas Field Given South Extension

COLUMBUS.—Sandyville field was further extended to the south by the Hamilton et al 1 Joseph Streb, Lot 39, Dover Township, Tuscarawas County. White Clinton at 4,508-39 ft. gaged 2,600,000 cu. ft. natural, but blew down some and shut in at 1,025,000 cu. ft. after shot. Rock pressure was 1,050 psi.

Clinton Oil Co. drilled an additional well in the old Newburg sand pool southeast of Newark on 7 Homer Ingman, Lot 14, Newark Township, Licking County. Sand at 2,140-56 ft. was shot and made 45 bbl. in 24 hours.

W. C. Adair 5 Wm. Bratton, 3rd Qr., Hopewell Township, Licking County, with Clinton at 2,998-3,040 ft., made 41 bbl. in the first day after shot.

Benedum & Trees is drilling a wildcat in Ashtabula County that is expected to reach the sub-Trenton, estimated to be around 6,000 ft., unless production is found above that horizon. The location is on George Corlett, Lot H, Lenox Township.

Few new locations were started over the holidays, and only five were reported for the week. Completions were also down with 13 reported.

OHIO WILDCAT FAILURES

Richland County, Blooming Grove Township: McManaway & Harmon 1 Elmer Wolf, Sec. 22, no Clinton, TD 2,243 ft.

Tuscarawas County: M. E. Belden et al 1 G. B. Walters, Sec. 25, Clinton 4,168-202 ft., dry, TD 4,471.

Mississippi

Madison County Wildcat Has Core With Good Show

JACKSON.—At its 15,500-ft. Smackover lime venture, Continental Oil Co. has good indications of a new discovery at 1 John R. Cameron et al., 36-10n-1e, wildcat test located 17 miles southwest of Pickens field, Madison County. A core cut from 10,676-701 ft. had 6 ft. of tight sand with show of oil and 7 ft. of coarse sand and gravel with excellent show of oil. A drill-stem test was conducted with packer set at 10,678 ft., testing to 10,701 ft., which failed. Up the hole, electric log and side-wall samples indicated 12 ft. of oil sand at 10,560-72 ft. At last report, operators were drilling ahead of 10,783 ft. in sand and gravel. Exact age of the sections having shows was not determined. Top of the Hosston gravels was picked at 9,710 ft. and there has been no definite Cotton Valley to total depth.

In Adams County, Danciger and William Helis B-1 George Armstrong, 19-5n-2w, continues to find shows of oil in the Wilcox. Core from 6,517-24 ft. was firm to hard, medium grained sand which had good odor, taste, and stain. It is reported that analysis of this sand indicated 3½ to 4 ft. of permeable oil sand, which is thought to be the Barksdale zone of the Wilcox. No drill-stem test was run at this point since operators plan to run casing for production tests.

Approximately 7 miles southeast of the town of Lumberton, I. P. LaRue 1 Creosote Oil Corp., 7-1s-13w, is at total depth of 9,010 ft. in Lower Cretaceous. Electric log was run and side-wall samples taken. Show of gas was indicated at 7,737-42 ft. At last report, three cores had been taken from 7,734-40 ft. Operator has made no definite

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decision as to whether casing would be run for production test.

Operations have been resumed at George Vasen 1 Fee, 9-2s-11w, Stone County, second deepest well in the world. Operators are currently coring below 19,590 ft.

ALABAMA WILDCAT FAILURE

Mobile County: Morgan-Borden 1 Harriet Kelly, 29-2s-2w, dry, TD 8,500 ft.

MISSISSIPPI WILDCAT FAILURE

Wilkinson County: G. A. Clements, R. Oliver, and B. Serio 1 E. Stuart et al., 5-2n-4w, dry, TD 8,406 ft.

Eastern Texas

Harrison County Has Gas-Condensate Extension

DALLAS.—Final gage has been reported at Stanolind Oil & Gas Co. 1 G. H. Sanders, 1-mile north outpost to the Woodlawn gas-distillate field of Harrison County. Completion potential was 195,000,000 cu. ft. of gas daily, plus 50.5 bbl. of 72°-gravity distillate per 1,000,000 cu. ft. of gas. Production is from the Pettit limestone through perforations at 6,378-6,410 ft. and 6,424-60 ft.

Application has been filed to drill a second wildcat in the area west of Perry in Falls County. J. E. Banks, Houston, plans to drill the 1 Carrie Mitchell on a 533-acre tract in the Basquez and Morgan surveys. Location is to be south of Banks 1 Karl Kerr, dry hole in the same survey.

According to field sources, a new pay was in prospect for the shallow field south of the Deer Creek field and northeast of the town of Lott, in Falls County. E. O. Scherlen and W. J. Uehlinger 1 Mrs. J. W. Bartlett, in the J. M. Graham Survey, was said to be taking a core when the well headed and flowed a considerable amount of oil.

When the flow had been controlled and drill stem pulled, electrical survey indicated pay between 1,087-1,105 ft., total depth. Operators believed the section to be Woodbine sand and not the Buda limestone which is the regular pay in the area. Reports indicated an earthen tank of 1,000 bbl. capacity, was about half full.

Southeast of the Oil Creek pay discovery in the Sandusky field, L. O. McMillan 2 Chambers prepared to run 5½-in. casing to 7,172 ft., after drilling pay from 7,173-78 ft. The same operator staked location for 3 Chambers, 1,420 ft. west of the No. 2 well.

The Texas Co. 1 M. A. Scarbrough, which has already shown for a producer from the Oil Creek, had prospects of a new Ordovician sand pay, according to reports. Sand with oil show was drilled from 7,766-72 ft., and sand with light show was drilled from 7,772-88 ft. However, a 2-hour drill-stem test from 7,713-91 ft. recovered 360 ft. of slightly oil and gas-cut mud.

South Louisiana

Ship Shoal Block 72 Field Gets New Deep Oil Pay

NEW ORLEANS.—Approximately 18 miles off Terrebonne Parish, Magnolia Petroleum Co. has completed its B-1 State Lease 768, Ship Shoal Block 87, for a new oil discovery. The well was drilled to a total depth of 11,978 ft. and 7-in. pipe set at 11,850 ft. Through perforations at 11,036-42 ft. and 11,048-54 ft., the well flowed 510 bbl. of 37.8°-gravity oil daily. Flowing tubing pressure was 1,970 psi. This well is in Ship Shoal Block 72 field, which has two shallow gas wells completed by Magnolia.

Final completion has been made on Louisiana's second deepest producer. Magnolia Petroleum Co. 1-N Doornbos-McPherson, 23-5s-8w, on the north flank of Hurricane Creek field, Beauregard Parish, was completed from open hole at 14,530-73 ft. The well was credited with 1,512 bbl. of 45.3°-gravity oil daily under casing pressure of 4,200 psi. This well opens a new Wilcox producing area. Previous production in Hurricane Creek is from the Cockfield sand at 8,200-8,600 ft. The deepest producer in the state is located in Weeks Island field, and is producing from casing perforations at 15,138-48 ft.

Four miles west of North Vinton field Calcasieu Parish, Sun Oil Co. apparently has a significant new discovery at its 1 Brooks, 20-10s-12w. The well is at total depth of 11,002 ft. in sidetracked hole, with 5½-in. casing cemented on bottom. Operators are now washing the well in. Depth of the producing zone was not revealed, but it is reported around 11,000 ft. Pressures are expected to reach 8,000 psi.

One-half mile north of production in DeQuincy field, Calcasieu Parish, Niloco Co. of Dallas 1 Industrial Lumber Co. "C," 35-7s-11w, is waiting on potential test after flowing an estimated 130 bbl. of oil per day through 7/64-in. choke. The well is at total depth of 6,850 ft., with oil string cemented at 5,328 ft. Production is through perforations at 5,218-20 ft.

SOUTH LOUISIANA SUCCESSFUL WILDCAT

Beauregard Parish: New pay at Hurricane Creek—Magnolia Petroleum Co. N-1 Doornsbos - McPherson, 23 - 5s - 8w, TD 14,573 ft., Wilcox 14,530-73 ft., IP 1,512 bbl. oil per day, 12/64-in. choke, 45.3° gravity.

SOUTH LOUISIANA WILDCAT FAILURES

Avoyelles Parish: Hunt Oil Co. et al., 2

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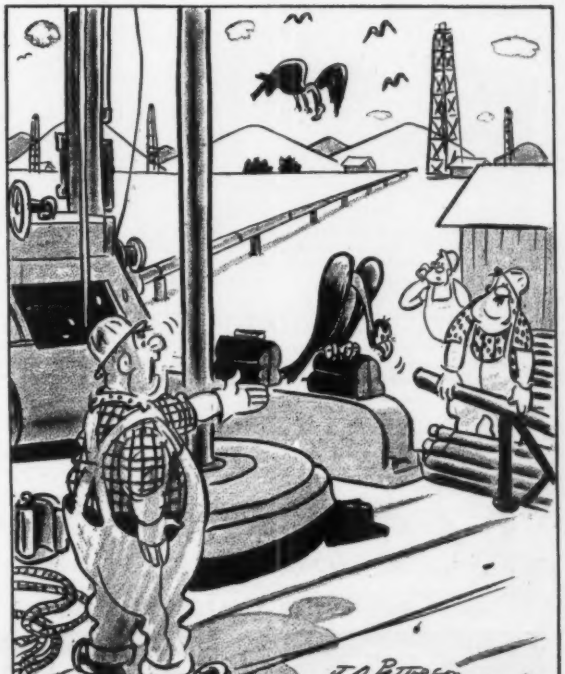

THE OIL AND GAS JOURNAL

"Ye gads, Kraufmeyer, whatever have you got up here in your lunch box?"

George W. Snowden, 24-3n-5e, dry, TD 8,002 ft.

Iberia Parish: Union Sulphur Co. 1 Miami Corp., Twp.-15s-6e, dry, TD 14,165 ft.

Vernon Parish: Mom Huffaker Oil Co. 1 Huffaker-Long Bell, 12-2s-9w, dry, TD 200 ft.

Rocky Mountain

Important Wildcats Testing In Colorado-Nebraska

DENVER.—Important wildcats throughout the Denver-Julesburg basin are now at critical depths and outcome of the tests will be of interest. In southeastern Wyoming, Ryan Oil Co. is reported in Dakota at 1 Scheel, C NE SW 21-16n-61w, a wildcat in the Pine Bluffs area. This well has reportedly had shows, but results of tests have not been announced. This is the first well in this area of the basin. Across the line in northern Colorado shows have been reported at the G. S. Atchison 1 Reagan, NE NE SE 11-10n-65w, Weld County. Shows have been logged in the J Sand and on drill-stem test 5,850-63 ft., the well made 410 ft. of gas cut mud with a blow of gas. The operator is coring in that sand. In the Nebraska portion of the basin, along the top of the arch extending from the Black Hills into the central Kansas area, Superior Oil Co. is now starting its third wildcat. No data have been released by the operator on any of the tests. Well 17-24-Murray, NW SW SW 24-32n-46w, was drilled in Sheridan County and 11-24-Dewey, NW NW NW 24-12n-20w, in Dawson County, with the operator now rigging up rotary for 27-12-Little, SE SW SW 12-5n-31w, in Hayes County. Superior is one of the largest lease holders in the current play through Colorado and Nebraska.

Three interesting wildcats were unsuccessful in Wyoming this week. Atlantic Refining Co. plugged the North Alkali Butte well at 1 Tribal, CS½ SE SE 29-1s-6e, Fremont County, with the well at 9,569 ft., total depth, in Tensleep. Tensleep was logged at 9,480 ft., and no shows were logged in that formation. Atlantic also had a failure at 1 Government, SE SW SW 32-38n-80w, in Southeast Castle Creek, Natrona County. This well went to 3,475 ft., total depth, into Morrison. The well is one of a series planned for the area between Salt Creek and Casper, following important discoveries near known fields through this area. A. B. Cobb, of Great Falls, on a farmout from Superior Oil Co., drilled a failure at 1 Unit, C SE SE 5-40n-68n, in the Dull Center area, Converse County. The operator considered abandoning the well, which was located on a seismic prospect, 2 weeks ago but decided to test Sundance, which was dry, prior to completion. The well went to 10,060 ft., total depth.

Another discovery, north of previous production in the Nebraska portion of the Denver-Julesburg basin, is now being completed. The Recco Oil Co. C. E. Stout 1 Foy, NE NE NE 30-17n-49w, Dalton, Cheyenne County, swabbed 7 bbl. of oil per hour on test of the Muddy sand this week. Casing was cemented through the sand and perforated with 35 holes between 4,687-98 ft. prior to the swab test. Sinclair Oil & Gas Co. and others have holdings in this area, and additional drilling is expected in the near future.

New locations.—There were 19 new locations during the week, with 12 in Wyoming, 2 each in Colorado, northern New Mexico, and western Nebraska, and 1 in Utah. In Utah, continuing an important exploratory program, Carter Oil Co. announced location for 1 Ute Tribal, C SE NE 17-4s-4w, a deep basal Green River (Tertiary) test on the Duchesne Unit. Continental Oil Co. is joining in the operation. Carter and Stanolind are now coring below 11,235 ft. on a wildcat in the Blue Bell area, 20 miles northeast of the new Duchesne well. Reserve Drilling Co. of Casper has rigged up and is preparing to spud at 1 Government, SE SE SW 4-37n-64w, a wildcat in the Twenty Mile area, north of Lance Creek field, Niobrara County, Wyoming. The well is located on a farmout from Atlantic Refining Co. and others.

COLORADO WILDCAT FAILURE

Beaver Creek, Moffat County: Cities Service 1 Wyman, NW NW SE 24-4n-90w, TD 5,853 ft., dry, Frontier 3,346 ft., Dakota 3,746 ft., Morrison 3,915 ft., Curtis 4,325 ft., Entrada 4,391 ft., Chinle 4,443 ft., Shinarump 4,852 ft., Moenkopi 5,010 ft., Weber 5,590 ft., Morgan 5,754 ft.

WYOMING WILDCAT FAILURES

Nowood, Big Horn County: Sierra Nevada 1 State, SE SE SE 16-49n-91w; 1,895 ft. TD; suspended.

Carpenter area, Laramie County: Hayes-Robertson Drilling Co. 1 Breeden, NE NE NE 9-12n-63w; TD 5,010 ft.; suspended.

Fontenelle Creek, Lincoln County: M. R. Homer 1 Hershler, NW NW 3-24n-114w; TD 2,456 ft.; suspended.

Sulphur Creek, Uinta County: Big Piney Oil & Development 2 UPRR, CE½ SE NE 27-14n-119w, TD 2,450 ft., suspended.

NORTHERN NEW MEXICO SUCCESSFUL WILDCAT

El Huerfano, San Juan County: Stanolind Oil & Gas Co. 2 Sullivan, SE NW NW 11-27n-10w, TD 2,151 ft., flow 1,670 M.c.f. gas daily from zone 2,050-2,151 ft., Pictured Cliffs 2,037 ft.

NEBRASKA WILDCAT FAILURE

Cheyenne County: Wallace-Utex Oil 1 Fee, C NE SW 22-14n-52w, TD 5,880 ft., dry.

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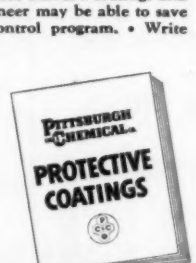

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SOUTH DAKOTA WILDCAT FAILURE

Deadwood area, Lawrence County: Weller-Bush Corp. 1 Weisman, NW SW SE 30-7n-4e, TD 3,143 ft., dry.

Illinois-Ind.-Ky.

New Pay and Extension Indicated in Zion Area

A NEW pay zone and a ¾-mile northward extension for the rapidly developing Zion North pool in Henderson County, western Kentucky, are indicated by results of a drill-stem test at George S. Engle 1 Harding Heirs, SE NE SW NE 24-Q-25.

Prospective pay zone is the Aux Vases with saturation logged at 2,198-2,201 ft. Interval tested was at 2,188-2,206 ft. In the test, the well started flowing gas within 15 minutes and clean oil within 100 minutes after the tool was opened.

Hole has been deepened to 2,351 ft. in McClosky lime, main producing zone of the field. Casing has been through the Aux Vases zone to 2,230 ft. The field also has some production in Benoist sand, in addition to the McClosky.

Testing is under way at Gulf Refining Co.'s prospective discovery well, 1 Frank Warnecke, NE NE NW 6-2n-3w, 3 miles northeast of Breeze, in Clinton County, Illinois. The well, which has given indications of production in both the McClosky lime and the Devonian, flowed at the rate of 50 bbl. of oil and 2,500,000 cu. ft. of gas in a test of the Devonian at 2,170-2,217 ft. In a previous drill-stem test of McClosky lime at 1,194-1,211 ft., the well showed considerable gas and flowed clean oil. Showings in the McClosky were the first of any consequence ever encountered west of the prolific Salem pool, 25 miles distant. Nearest other production, which is in Cypress sand, is in the Frogtown pool, 1½ miles to the southwest, and the Carlyle pool, 3½ miles east.

R. F. McMahan 1 Ford, SE NW NW 16-N-32, east side of the Bells Run pool, western Ohio County, has been completed as a small pumper, 4 bbl. per day, to prove a new pay zone for that area. Production is from Cypress sand at 993-1,021 ft.

ILLINOIS WILDCAT FAILURES

Bond County: J. L. Neary 1 Howard, S½ NE NE SW 28-7n-3w, dry, TD 1,071 ft.

Clark County: J. Minnece 1 Helman, SE NE SE 36-11n-11e, dry, TD 2,288 ft.

Clinton County: C. T. Smith 1 Yantis Heirs, SW NW NE 27-3n-1w, dry, TD 2,867 ft.

Coles County: F. R. Stocker 1 Hite, SE SW NE 16-12n-14w, dry, TD 1,487 ft.

Fayette County: Shakespear Oil Co. 1 Stocks, NE NW SE 3-6n-3e, dry, TD 1,821 ft.

Franklin County: J. W. Everhart 1 Jenkins, NE NW SE 27-6s-4e, dry, TD 3,238 ft.

Hamilton County: Calvert Drilling Co. 1 McGill, NE SE NW 15-6s-6e, dry, TD 3,300 ft.

Jefferson County: W. W. Dayton 1 Grant, NE NW SE 29-3s-3e, dry, TD 2,851 ft.

Marion County: G. C. Schoonmaker 1 Walsh Community, E½ NW NE SW 19-3n-3e, dry, TD 2,443 ft.

Richland County: Miami Operators Co. 1 Kurtz, SE SE NE 21-3n-10e, dry, TD 3,283 ft.

White County: Illinois Mid-Continent Co. 1 Seitz, NE SW SE 6-5s-10e, dry, TD 3,285 ft.

INDIANA WILDCAT FAILURES

Daviess County: Walter Roung 1 Arney, NE SE SE 9-4n-6w, dry, TD 1,160 ft.

Gibson County: Charles Nurg and Howard Brothers 1 Field, S½ SE NE NE 20-1s-10w, dry, TD 2,007 ft.

Posey County: Shakespear Oil & Gas Co. and V-T Drilling Co. 1 Guenther, NW SE NE 29-4s-13w, dry, TD 1,913 ft.

W. W. Toler 1 Stauber, NW SE NW 3-8s-14w, dry, TD 1,913 ft.

WESTERN KENTUCKY SUCCESSFUL WILDCAT

Hancock County: R. F. McMahan 1 Ford, SE NW NW 16-N-32, IP 4 bbl., Cypress 993-1,021 ft., TD 1,021 ft.

WESTERN KENTUCKY WILDCAT FAILURES

Daviess County: Ellis and Associates 1 O'Bryan, SE SW NW 13-O-27, dry, TD 2,311 ft.

Hancock County: J. E. Ellis 1 Dewitt, 14-O-35, dry, TD 708 ft.

Henderson County: National Associated Petroleum Co. 1 Dossett, 23-O-22, dry, TD 2,776 ft.

Union County: Carter Oil Co. 2 Moore, 21-P-20, dry, TD 2,718 ft.

EASTERN KENTUCKY

ASHLAND.—In Springfork pool of eastern Breathitt County, United Carbon Co. has completed 1745 E. J. Evans fee at a total depth of 1,766 ft. and bottomed in shale. Well made 7 bbl. oil daily from Weir sand 1,654 to 1,754 ft. Well was shot with 212 qt. nitroglycerine.

In Fleming County, 20-V-70, Walter Kline et al is shut down at a depth of 1,650 ft. and approximately 75 ft. in the Knox dolomite of Cambro-Ordovician age. Although hole is making water operators plan to drill ahead.

In Greenup County, 3-Y-79, Dixie King Oil & Gas Co. is running pipe at 1 Wain Boggs preparatory to drilling ahead. Present total depth is 610 ft. in Devonian black shale.

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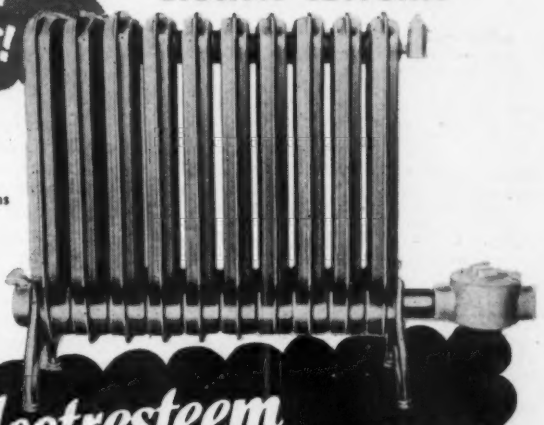

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Louisiana-Arkansas

Benton Field Gets Good Producer

SHREVEPORT.—One of the better wells in Benton field, Louisiana, has been completed by Sunray Oil Corp. at its 18 Benton unit. The well, located in 12-20n-13w, Bossier Parish, flowed 398 bbl. of 36.7°-gravity crude from the Bodcaw sand at 8,148-61 ft. It produced from open hole on a 16/64-in. choke. Tubing pressure was 900 psi. and casing pressure was 1,650 psi. Gas-oil ratio was 1,732-1, and 7 per cent wash water flowed with the oil.

In Concordia Parish, operators were preparing to swab after drill-stem test flow died at R. A. Campbell Co.'s 1 Learned-Metcalf. The wildcat, 1-4n-8e, flowed 24 bbl. of fluid, 80 per cent oil, on a 5-hour test, but pressure dropped from 75 psi. to 5 psi. killing the flow.

After more than a year's inactivity in Sabine Parish, Union Oil Co. of California has started its third wildcat in the Many area. The new test, in SW 27-7n-1w, is the 1 Slovak Crnkovic and is scheduled to go to 5,800 ft. or to the Rodessa. Union's first venture here, 1 Long Bell Lumber Co., 35-7n-13w, was dry at total depth of 6,011 ft. The company's last operation, 1 R. P. Ferguson, 11-7n-11w, was also unsuccessful at total depth of 6,452 ft.

Athens field of Claiborne Parish received a 167-bbl. producer when Skelly Oil Co. completed its 1 Baker-Gandy in the Hosston. Production was from perforations at 7,469-87 ft. and 7,491-7,505 ft. The new producer is spotted in 25-20n-7w.

NORTH LOUISIANA WILDCAT FAILURES

Clairborne Parish: W. T. McElwee 1 Williams-Wright unit, 32-19n-7w, dry, TD 7,919 ft.

DeSoto Parish: E. Z. Skeeters 1 Calvert, 10-13n-13w, dry, TD 3,518 ft.

Grant Parish: Justiss-Mears Oil Co. 2 Lee Lumber Co., 27-6n-2e, dry, TD 2,480 ft.

Ouachita Parish: Petersen Drilling Co. 1 E. C. Gaskin, 14-16n-3e, dry, TD 6,457 ft., massive anhydrite 4,600 ft., James 5,402 ft., Hosston 6,152 ft., elev. 65 ft.

Sabine Parish: Major Oil Co. A-2 Long Bell, 24-8n-14w, dry, TD 2,406 ft.

Union Parish: Southern Carbon Co. 1 D. Cartlidge, 9-19n-2e, dry, TD 7,911 ft.

ARKANSAS WILDCAT FAILURES

Columbia County: McAlester Fuel Co. 1-A W. A. Ruston unit, 14-19s-20w, dry, TD 5,651 ft., Nacatoch 2,191 ft., Saratoga 2,504 ft., Tokio 3,232 ft., massive anhydrite 4,236 ft., James 5,038 ft., Pettit 5,485 ft., elev. 356 ft.

Hempstead County: Myers & Collins 1 Peace, 20-12s-27w, dry, TD 267 ft.
Myers & Collins 2 Peace, 20-12s-27w, dry, TD 273 ft.

INTERNATIONAL

(Continued from page 64)

Butane and heavier hydrocarbons will be extracted from the gas, and the stripped gas will be returned to the reservoir to minimize pressure decline. The light fractions, which, through evaporation, would cause crude-oil loss during tanker transportation, will be stripped from the crude oil. The stable liquid hydrocarbons extracted from the gas will be blended with the stripped crude.

Hudson has been engaged by Corporacion de Fomento de la Produccion, a division of the Chilean Government to develop process and mechanical design of the plant, to assist in the purchase of equipment, and to supervise the construction at Tierra del Fuego. It is expected that the plant will be placed in operation in June 1951.

Creole Production Rises

Creole Petroleum Corp.'s production in Venezuela reached another new high in November with an average of 687,868 bbl. daily.

This operated production was 3,994 bbl. daily above the total for October. Net production plus purchased royalty in November averaged 727,983 bbl. daily against 721,593 daily in October.

Of the daily average operated production in November, 530,368 bbl. came from Lake Maracaibo, 3,241 bbl. from Cumarebo and Mara, and 154,259 bbl. from Eastern Venezuela.

During November, runs at the refinery at Amuay averaged 62,804 bbl. daily. Throughput at Caripito in Eastern Venezuela was 47,559 bbl. daily.

Creole had an average of eight rigs operating in November. Eight field wells were completed, all oil producers, three of them in Quiriquire and five in Maracaibo. The two exploration wells drilled during the month were both successful oil producers. They were in the B.C.F. area and had an initial production of 1,456 bbl. daily and an average total depth of 5,879 ft.

Oil Contract Negotiated

A new contract for the purchase of an average of about 800 bbl. daily of Venezuelan royalty oil at premium prices has been negotiated by Ipiranga, S.A., Cia. Brasileira de Petroleas, with the Venezuelan Government.

The Brazilian company will buy 480,000 bbl. of Cumarebo royalty crude and 120,000 bbl. of Quiriquire oil from the government over a 2-year period commencing January 1.

The price for the Cumarebo crude will be 15 cents and for Quiriquire, 5 cents, over the price the producer will pay the government for similar royalty oil. Cumarebo crude has a gravity of 47°, and Quiriquire, 17.4°.

The company operates a 1,000-bbl. daily skimming plant at Rio Grande do Sul in Brazil. The Venezuelan Government has already sold 1,330,000 bbl. of crude to the company.

Venezuelan Plant Planned

Construction will start soon on a crude-stabilization and pressure-maintenance plant adjacent to the new refinery and wax plant in Venezuela of Phillips Oil Co., subsidiary of Phillips Petroleum Co. Both projects are to be constructed in the San Roque field, located on a 130,000-acre concession of Phillips Oil in the State of Antzoategui, Eastern Venezuela.

The new field facilities will be capable of handling 10,000 bbl. of crude daily for stabilization as well as 38,000,000 cu. ft. of gas per day from which a 13 lb. R.v.p. liquid will be extracted for blending into the crude oil. Gas will be returned to the producing formation at a discharge pressure of 3,500 psi., for pressure maintenance.

The new Phillips field plant is the latest of a series of such plants built

in recent years in Venezuela to effect conservation of gas while maintaining pressure in producing wells. The wax plant will be the first to manufacture this product in Venezuela and will have a capacity of over 2,000,000 lb. of high-grade wax per year, derived from San Roque crude. The crude-distillation facilities of the Phillips refinery will have a charging capacity of 3,000 bbl. per day and will produce gasoline, diesel fuel, and other refined products.

EUROPE

Caltex Pipe Line in Italy

California Texas Oil Co., Ltd., interests are constructing a 100-mile, 8-in. crude-oil pipe line in northern Italy extending from the Savona on the Mediterranean to a point near San Matino de Trecate, located on the main railway line between Milan and Turin.

One pump station will be installed at Savona which will be equipped with three electric motor-driven reciprocating pumps which will move shipments at the rate of approximately 600,000 tons per year (12,000 bbl. daily).

Construction of the line is being handled by several Italian contractors. Stringing and welding started in October and completion is scheduled for the fall of 1952.

New Zone for Suderbruch

A new producing formation has been opened up in Suderbruch field in the Hamburg district of northwestern Germany.

Well No. 8 was completed in the Valendis sand of the Lower Cretaceous for about 400 bbl. daily at a depth of about 3,600 ft. The six other producing wells in the field are completed in the deeper Cornbrash of the Jurassic at around 6,750 ft.

Shows in the Valendis have previously been noted but the No. 8 is the first to be completed in that formation. The field was discovered in 1949 and started producing in August of that year. The field is shared by Brigitta (Standard Oil Co. [N.J.] and Shell) and Vacuum. Present production is about 1,000 bbl. daily.

Oil Allotments Drop

Economic Cooperation Administration allotments to Marshall-plan countries for the procurement of crude oil and refined products last year dropped nearly 25 per cent as compared with 1949, it is estimated on the basis of 11 months' figures.

A year-end summation of its activities by ECA disclosed that allocations for oil in the January-November period amounted to $294,400,000 compared with $382,800,000 in 1949. Allocations for petroleum were exceeded only by those for machinery and equipment, and cotton.

From the inception of the European Recovery Program in April 1948, to the end of November allocations for crude and products amounted to $1,069,600,000, it was reported.

The ECA review showed that purchase approvals for the Marshall-plan countries last year averaged about $190,000,000 a month against $324,000,000 a month in 1949, the decline reflecting the reduction in American aid made possible as the industries of Europe recovered from the war.

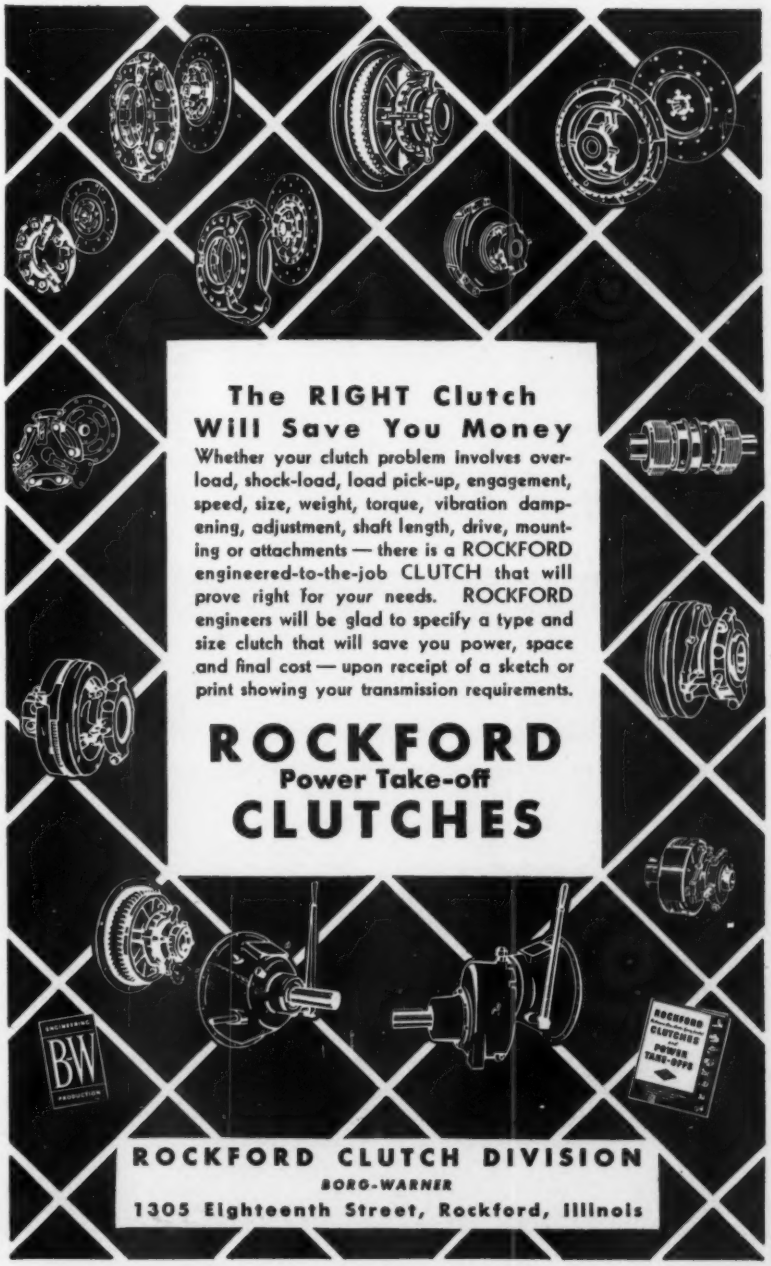
FAR EAST

Indonesian Output

Refineries are advancing toward prewar production

OUTPUT of Indonesian refineries since the war has been stepped up from 1,019,000 bbl. or 3,000 bbl. daily in 1946 to 47,529,000 bbl. or 130,000 bbl. a day in 1949, it was reported in a study of the petroleum industry in the East Indies prepared by Richard B. Peters, foreign service officer on

(Continued on page 147)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Will Save You Money
Whether your clutch problem involves overload, shock-load, load pick-up, engagement, speed, size, weight, torque, vibration dampening, adjustment, shaft length, drive, mounting or attachments — there is a ROCKFORD engineered-to-the-job CLUTCH that will prove right for your needs. ROCKFORD engineers will be glad to specify a type and size clutch that will save you power, space and final cost — upon receipt of a sketch or print showing your transmission requirements.
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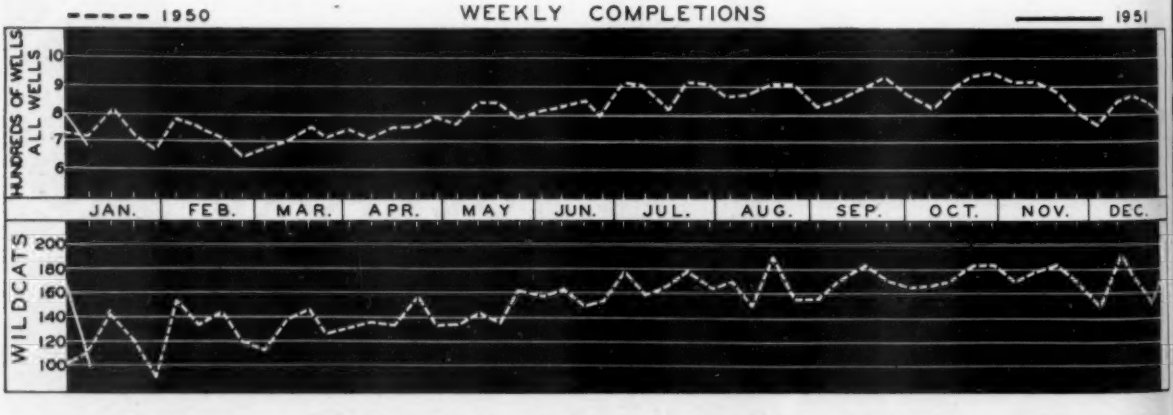
CURRENT STATISTICS

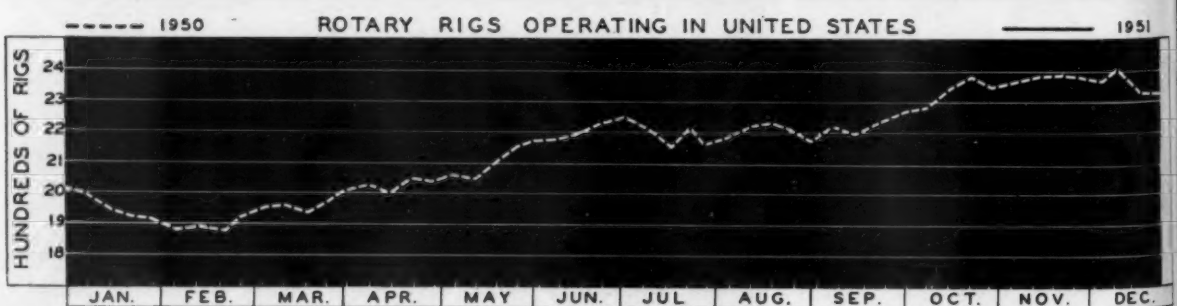
EXPLORATION

WEEKLY WELL COMPLETIONS . . . . . WEEK ENDED JANUARY 6, 1951

	Total of all wells					Jan. 6		Wildcat completions and discoveries									
													Cumulative total, 1951				
	Comp.	Oil	Gas	Dry	Footage	1951	1950	Oil	Dist.	Gas	Dry	Total	Oil	Dist.	Gas	Dry	Total
New York	9	5	0	*4	13,104	9	16	0	0	0	0	0	0	0	0	0	0
Pennsylvania	18	8	3	†7	30,159	18	24	0	0	0	0	0	0	0	0	0	0
West Virginia	10	0	6	4	34,902	10	14	0	0	0	1	1	0	0	0	1	1
Ohio	13	5	2	‡6	35,166	13	19	0	0	0	2	2	0	0	0	2	2
Indiana	36	9	3	24	59,383	36	41	0	0	0	4	4	0	0	0	4	4
Kentucky	22	8	4	10	38,102	22	27	1	0	0	4	5	1	0	0	4	5
Illinois	54	25	0	29	142,770	54	58	0	0	0	11	11	0	0	0	11	11
Michigan	14	7	0	7	30,333	14	24	0	0	0	5	5	0	0	0	5	5
Kansas	59	34	3	§22	206,990	59	50	3	0	0	6	9	3	0	0	6	9
Nebraska	1	0	0	1	5,880	1	0	0	0	0	1	1	0	0	0	1	1
Oklahoma	60	32	1	27	233,839	60	68	1	0	0	9	10	1	0	0	9	10
Texas	268	204	8	56	1,250,213	268	229	5	0	1	13	19	5	0	1	13	19
North Central (Dist. 7-B & 9)	78	60	0	18	232,440	78	64	0	0	0	0	0	0	0	0	0	0
West (Dist. 7-C & 8)	72	62	0	10	399,960	72	44	0	0	0	0	0	0	0	0	0	0
Panhandle (Dist. 10)	8	8	0	0	24,488	8	37	0	0	0	0	0	0	0	0	0	0
Eastern (Dist. 5, 6, & 6-P)	16	12	0	4	70,752	16	23	0	0	0	0	0	0	0	0	0	0
Gulf Coast (Dist. 2 & 3)	45	27	5	13	282,730	45	33	4	0	0	7	11	4	0	0	7	11
Southwest (Dist. 1 & 4)	49	35	3	11	239,843	49	28	1	0	1	6	8	1	0	1	6	8
Louisiana	41	20	6	15	234,013	41	69	2	0	0	9	11	2	0	0	9	11
Northern	27	12	6	9	97,941	27	61	0	0	0	6	6	0	0	0	6	6
Southern	14	8	0	6	136,072	14	8	2	0	0	3	5	2	0	0	3	5
Arkansas	13	5	0	8	19,399	13	12	0	0	0	3	3	0	0	0	3	3
Mississippi	1	0	0	1	8,406	1	7	0	0	0	1	1	0	0	0	1	1
Southeastern States	2	0	0	2	11,949	2	2	0	0	0	1	1	0	0	0	1	1
Montana	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Wyoming	12	7	0	5	50,903	12	4	0	0	0	4	4	0	0	0	4	4
Colorado-Utah	4	1	0	3	7,796	4	1	0	0	0	1	1	0	0	0	1	1
New Mexico	7	4	2	1	55,974	7	15	0	0	1	0	1	0	0	1	0	1
California	32	23	0	9	146,295	32	33	0	0	0	7	7	0	0	0	7	7
Miscellaneous (S. Dak.)	1	0	0	1	3,143	1	0	0	0	0	1	1	0	0	0	1	1
Total United States	677	397	38	242	2,618,749	677	714	12	0	2	83	97	12	0	2	83	97
Total previous week	814	458	60	296	3,135,702	....	....	29	1	4	139	173	1,138	73	211	6,586	8,008
Total January 6, 1950	714	403	67	244	2,393,456	....	....	21	0	8	82	111	21	0	8	82	111

Service wells included: *4, †7, ‡2, §1.





DAILY AVERAGE PRODUCTION FOR WEEK

	Jan. 6 crude oil	B. of M. Jan demand	Dec. 30 crude oil
Alabama	2,550	2,400	3,050
Arkansas	81,800	88,000	81,850
California	964,500	960,000	962,700
Colorado	77,600	63,000	78,400
Eastern	62,000	67,000	59,850
Florida	1,475	1,600	1,375
Illinois	169,100	176,000	168,200
Indiana	31,300	31,000	30,900
Kansas	309,300	301,000	323,200
Kentucky	31,100	31,000	30,900
Louisiana	595,825	612,000	592,650
North Louisiana	116,550	.....	116,700
South Louisiana	479,275	.....	475,950
Michigan	42,100	47,000	42,200
Mississippi	100,850	114,000	100,750
Montana	22,000	23,000	22,200
Nebraska	8,000	6,000	7,500
New Mexico	134,250	138,000	130,800
Oklahoma	491,900	470,000	495,850
Texas	2,400,375	2,395,000	2,375,425
Dist. 1 (Southwest)	31,500	.....	31,000
Dist. 2 (Southwest)	141,425	.....	141,350
Dist. 4 (Southwest)	221,650	.....	218,375
Dist. 3 (Gulf Coast)	425,400	.....	425,700
Dist. 5 (Eastern)	42,625	.....	40,075
Dist. 6 (Eastern)	94,375	.....	92,150
East Texas field	272,000	.....	269,700
Dist. 7-C (West)	72,925	.....	71,825
Dist. 8 (West)	784,625	.....	773,400
Dist. 7-B (W. Central)	73,425	.....	72,650
Dist. 9 (N. Central)	150,425	.....	149,200
Dist. 10 (Panhandle)	90,000	.....	90,000
Utah	3,800	4,000	3,900
Wyoming	183,100	180,000	181,800
Total United States	*5,712,925	5,715,000	5,693,550
Change from previous week, up	19,375		

Total U. S. production January 1-January 6 ..... †40,574,975 bbl.
Same period last year (crude plus cond.) ..... 29,860,800 bbl.

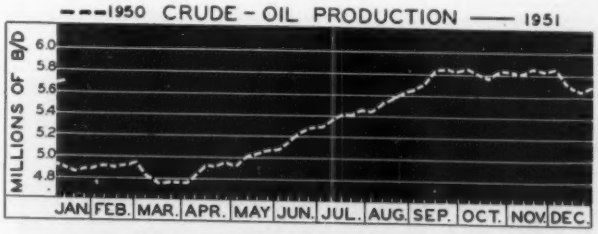
*Not including 83,500 bbl. condensate. †Including 584,500 bbl. condensate.

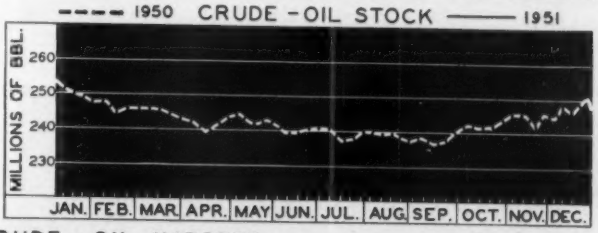
CRUDE-OIL STOCKS BY STATES OF ORIGIN*

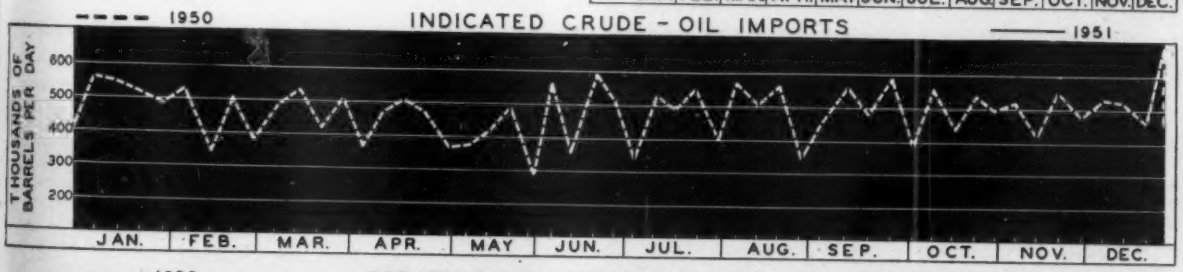
(Thousands of barrels)

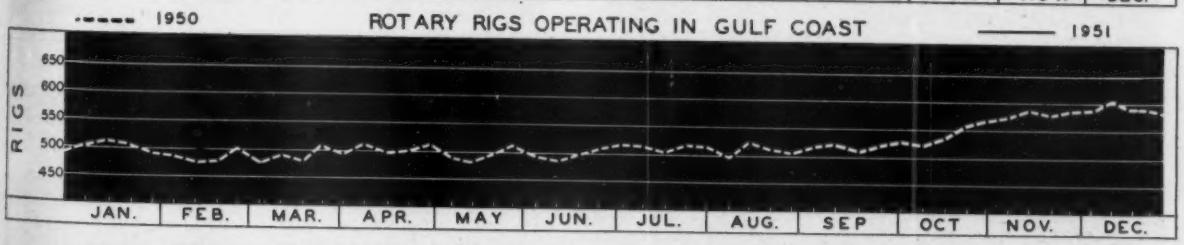
	Dec. 30, 1950	Dec. 23, 1950	Dec. 31, 1949
Pennsylvania Grade	2,079	2,186	2,837
Other Appalachian	1,299	1,451	1,879
Illinois, Indiana, Michigan	9,819	9,811	12,084
Arkansas	2,608	2,474	3,005
Louisiana	13,909	14,488	14,061
North	2,638	2,653	3,362
Gulf	11,271	11,835	10,699
Mississippi	2,324	2,564	2,254
New Mexico	6,985	7,158	7,622
Oklahoma and Kansas	39,169	39,001	38,073
Texas	118,293	120,878	114,534
East Texas	14,845	14,753	15,978
West Texas	46,849	47,392	42,157
Texas Gulf	27,932	28,574	30,141
Other Texas	28,667	30,159	26,258
Rocky Mountain	11,475	11,541	13,339
California	31,155	31,000	38,149
Foreign	7,598	8,247	6,607
Total	246,713	250,799	254,449

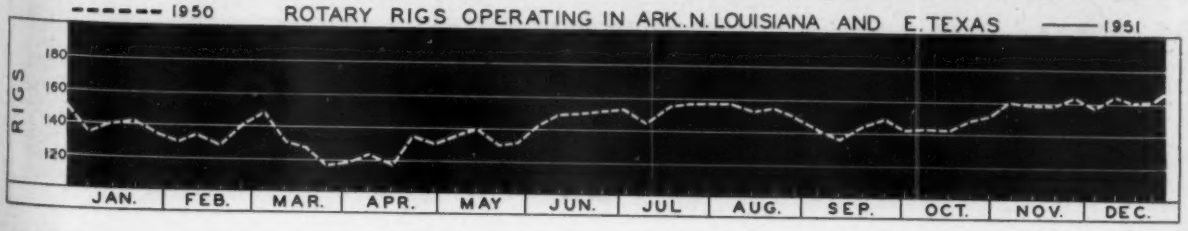
*Bureau of Mines.









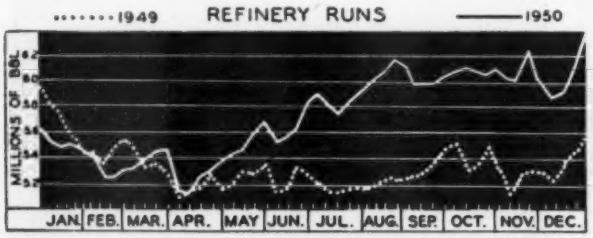

1950 ROTARY RIGS OPERATING IN ARK. N. LOUISIANA AND E. TEXAS 1951
RIGS
180
160
140
120
JAN. FEB. MAR. APR. MAY JUN. JUL AUG. SEP. OCT. NOV. DEC.

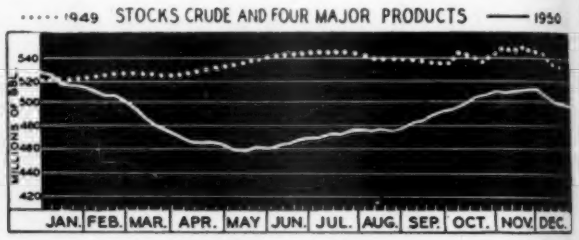
A.P.I. REFINERY REPORT, DECEMBER 30

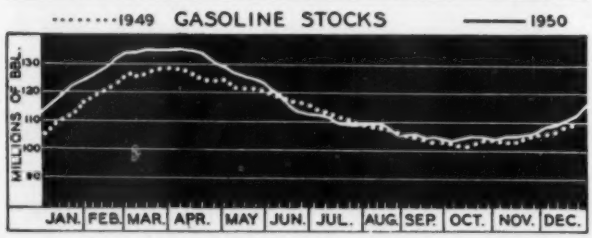
(Thousands of barrels)

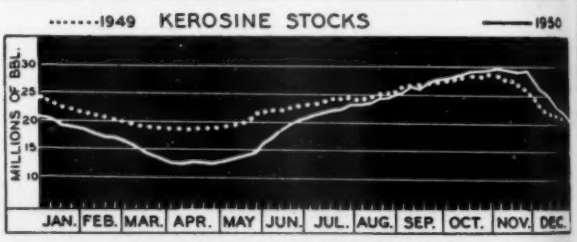
District—	Daily avg. crude runs	Daily average production				Stocks at refineries, bulk terminals, in transit and in pipe lines				Bureau of Mines, December 1949				
		Gasoline*	Kerosine	Distillate	Residual	Gasoline†	Kerosine	Distillate	Residual	Daily avg. crude runs	Daily average production: Gasoline*	Kerosine	Distillate	Residual
East Coast	984	404.7	52.3	257.6	320.4	24,538	8,419	21,590	10,079	854	345.8	38.5	197.8	214.8
Appalachian:														
District 1	91	40.3	6.0	16.3	12.0	2,830	339	682	368	95	44.2	6.3	14.7	13.4
District 2	68	29.1	3.6	8.7	27.3	1,236	155	134	153	63	32.0	5.3	8.1	14.1
Ind., Ill., Ky.	1,158	556.4	74.6	216.9	172.7	24,922	4,516	10,287	3,590	967	500.1	63.1	170.5	174.7
Okla., Kans., Mo.	547	286.9	20.4	140.4	74.6	11,919	1,003	7,920	1,223	437	242.0	18.1	86.3	59.7
Inland Texas	221	160.6	11.3	33.7	39.9	3,759	423	990	629	198	137.7	12.9	23.9	39.5
Texas Gulf Coast	1,583	683.2	135.8	397.3	287.7	17,998	3,021	12,689	4,968	1,324	610.5	114.6	285.8	243.9
La. Gulf Coast	510	239.4	52.7	133.1	68.7	7,356	1,111	3,647	2,353	455	231.4	63.1	88.5	64.4
N. La. and Ark.	78	31.3	9.3	15.3	8.7	2,677	262	781	158	72	31.0	7.0	12.1	15.7
Rocky Mountain:														
New Mexico	14	7.1	0.4	2.9	3.4	104	25	52	32	13	7.2	0.5	1.8	3.2
Other Rocky Mtn.	206	94.0	5.6	46.1	45.9	3,537	290	1,621	779	174	85.2	5.9	32.5	34.1
California	928	413.0	12.7	163.7	356.6	15,819	771	10,925	17,201	823	365.5	11.6	110.3	322.2
December 30, 1950	6,388	2,946.0	384.7	1,432.0	1,417.9	116,695	20,335	71,318	41,533	5,475	2,632.6	346.9	1,032.3	1,202.7
December 23, 1950	6,159	2,867.9	371.4	1,348.0	1,245.0	112,631	21,819	73,273	39,914	.....	.....	.....	.....	.....
December 31, 1949	5,626	2,721.6	353.7	1,084.4	1,206.3	113,497	20,838	77,801	61,675	.....	.....	.....	.....	.....

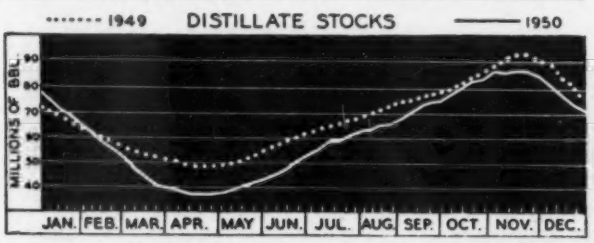
*At refineries including natural blended. †Finished and unfinished.

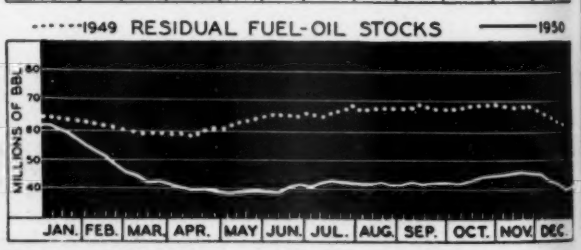


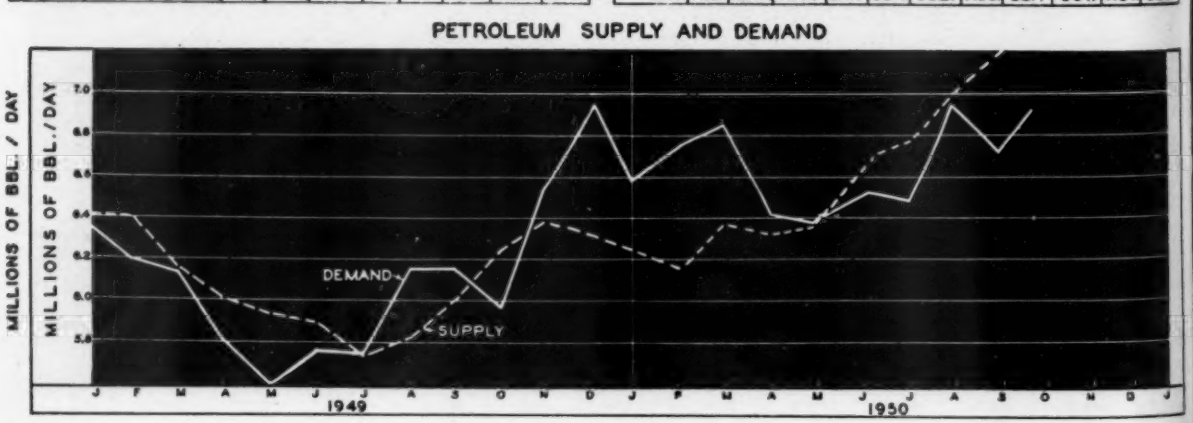











PETROLEUM SUPPLY AND DEMAND
MILLIONS OF BBL. / DAY
MILLIONS OF BBL./DAY
DEMAND
SUPPLY
J F M A M J J A S O N D J F M A M J J A S O N D J
1949
1950

CRUDE PRICES
GRAVITY SCHEDULE

	Signal Hill, Calif.‡	Oklahoma, Kansas	Gulf Coast Tex.*	West Tex.†
18-18.9	$1.93	....	....	....
19-19.9	1.98	....	....	....
20-20.9	2.03	$2.25	....	$2.12
21-21.9	2.07	2.27	....	2.14
22-22.9	2.12	2.29	....	2.16
23-23.9	2.18	2.31	....	2.18
24-24.9	2.24	2.33	$2.56	2.20
25-25.9	2.30	2.35	2.58	2.22
26-26.9	2.36	2.37	2.60	2.24
27-27.9	2.41	2.39	2.62	2.26
28-28.9	2.46	2.41	2.64	2.28
29-29.9	2.52	2.43	2.66	2.30
30-30.9	2.57	2.45	2.68	2.32
31-31.9	2.62	2.47	2.70	2.34
32-32.9	2.68	2.49	2.72	2.36
33-33.9	....	2.51	2.74	2.38
34-34.9	....	2.53	2.76	2.40
35-35.9	....	2.55	2.78	2.42
36-36.9	....	2.57	2.80	2.44
37-37.9	....	2.59	2.82	2.46
38-38.9	....	2.61	2.84	2.48
39-39.9	....	2.63	2.86	2.50
40 and above	....	2.65	2.88	2.52

*For crude from Daboval, El Campo, and Sand Point.

†Includes Lea County, New Mexico. Last general price change represented a 50-cent increase becoming effective December 6, 1947.

‡Standard Oil Co. of California.

FLAT CRUDE PRICES

Representative posted schedules per barrel.

East Texas†	$2.65
Kettleman Hills, California*	2.80
Beauregard Parish	2.60
Illinois Basin	2.77
Pecos County, Texas (Yates)	2.35
Bradford, Pennsylvania	4.25
Eastern Ill. and Western Ind.†	2.77
Tomball, Texas Gulf Coast	2.83

*37°-37.9°. †35° and above.

COMPANY compliance with the request of the Economic Stabilization Agency to freeze petroleum-product prices is bringing cargo trading on the Gulf Coast to a standstill, since tanker rates are still rising. In the latter part of May 1950, some material moved from Gulf Coast ports to points north of Hatteras on the East Coast for the subnormal rate of 35 per cent off the Maritime Commission base of $2.85 per long ton. For heavy fuel this would amount to a little less than 30 cents a barrel. By the early part of December, the Gulf-East Coast rate had moved up to the base rate plus 110 per cent or a little less than $6 a long ton. Recent fixtures have been reported at 145 per cent over the base rate or almost $7 a long ton. Movement of heavy fuel at this rate would cost about $1.07 per barrel.

It is obviously impossible for a large percentage of Gulf-East Coast shipments to move at these rates, since the low postings on the Gulf is $1.75 and the high on the New York Harbor market its $2.30 a barrel. Companies with tanker fleets or with tankers under long-term charter can move crude and products at a lower rate, but even for them, shipping costs are up.

Buyers in the New York Harbor are reported bidding .5 cent over the market for kerosine, but are getting no offers. Outside of deliveries to regular customers, most trading in the harbor has been confined to exchanges or "swaps" of kerosine and No. 2 fuel.

Tank cars are still very tight in the Mid-Continent area with products that are hard to find even harder to move. Bids for residual fuel, running as high as $2.40 a barrel, have been reported in Oklahoma, but no Group 3 sales at that figure could be confirmed. Demand for No. 2 fuel continues strong.

REPRESENTATIVE QUOTATIONS

Representative spot-market quotation of leading suppliers as of January 8, 1951. Figures are f.o.b. plant for tank-car shipments in cents per gallon, except for residual fuel oil which shows the price per barrel and wax, in cents per pound.

GASOLINE, KEROSINE, AND FUEL OILS

	Mid-Continent Group 3	New York Harbor (barge)	Texas Gulf Coast
Regular gasoline, 80-82 octane	10⅛-10½	12-12.75	10¾-11
Premium gasoline, 86-88 octane	11⅛-11½	13.5-13.75	11½-12
42-44 w.w. kerosine	9¼-9⅜	10-10.1	8¾-9
No. 2 straw fuel oil	8⅜-8⅝	9-9.25	7¾-8
No. 6 residual	$1.80-1.90	$2.25-2.30	$1.75-1.90

NATURAL GASOLINE

	Group 3	North Texas	N. La
Grade 26-70	6⅞	6¾	6⅝
Grade 18-55	8.25	7.75	8.0

LUBRICATING OILS

South Texas

200 vis., No. 2-3 neutral	13-13.5
750 vis., No. 3-4 neutral	16
2,000 No. 5-6 neutral	18-19

LUBRICATING OILS

Mid-Continent

150-160 vis., D bright stock, 0-10 pp.	29-30
200 vis., No. 3 neutral, 0-10 pp.	17.5-18.5

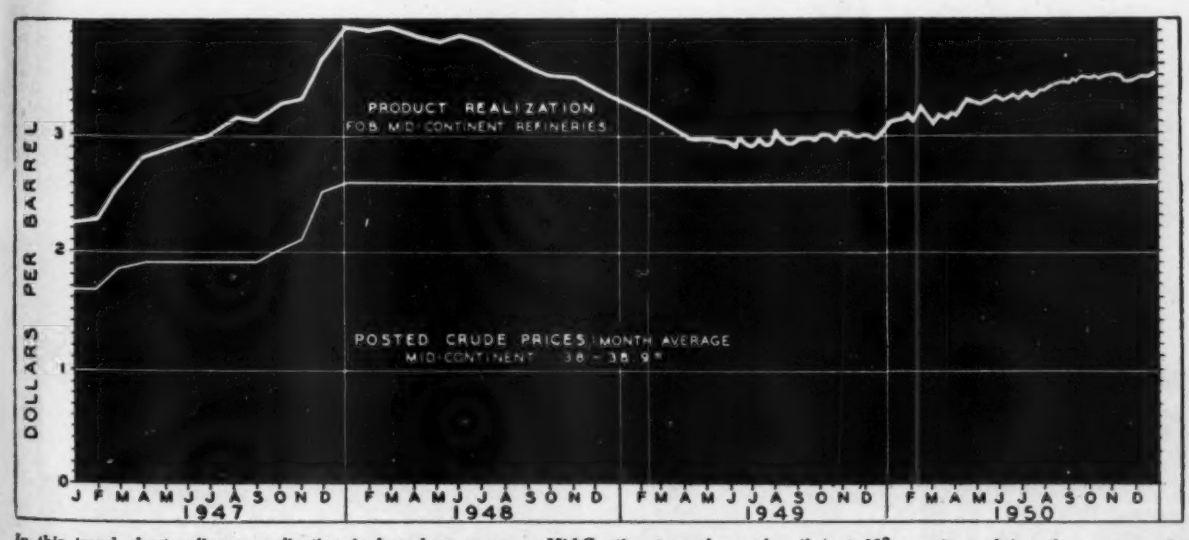
Western Pennsylvania

145-155 vis., 10 p.t. bright stock	32.5
180 vis., 0 p.t. neutral	31.5

WAX

Mid-Continent

132-134 A.M.P.	6.0


PRODUCT REALIZATION
F.O.B. MID-CONTINENT REFINERIES
POSTED CRUDE PRICES 1 MONTH AVERAGE
MID-CONTINENT 38 - 38.9°
DOLLARS PER BARREL
0
1
2
3
J F M A M J J A S O N D
1947
F M A M J J A S O N D
1948
F M A M J J A S O N D
1949
F M A M J J A S O N D
1950

In this trend chart refinery realization is based on average Mid-Continent grade crude oil (not 38° gravity only) and average prices for refinery products as published in The Oil and Gas Journal basis Oklahoma (Group 3). Refinery yields confined to gasoline, kerosine, distillate, and fuel oil. Realization averaged $3.53 for week ended December 30, $3.50 for previous week, and $3.08 for December 1949.

FOR ACCURATE FLOW MEASUREMENT

SPECIFY THIS ENGINEERED COMBINATION

AITKEN MICRO-meter TUBES

WITH

ROBINSON ORIFICE FITTINGS

You can rely on the accuracy of Aitken MICRO-meter Tubes for all measurement requirements. Precision manufacture from selected seamless pipe provides balanced accuracy from flow-tube to orifice meter. Complete Houston stocks.

Write today for the 1951 Robinson Catalog containing new tables and data.

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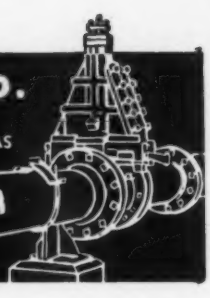
TELEPHONE Victor 4491
5960 KANSAS ST. HOUSTON 7, TEXAS



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Your Best Bet is BOYD!

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- **PARSONS** Wheel Trenchliners
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- **INTERNATIONAL** TracTractors
- **SUPERIOR** Cardwell Sidebooms
- **KOEHRING** Backhoes, Draglines

CLARENCE L. BOYD CO.
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TULSA, OKLAHOMA

Continental
EXPLOSION-PROOF MOTORS
1 to 600 Hp.

150 Hp. 3600 R.p.m. Explosion-Proof Motor with oil lubricated ball bearings

CONTINENTAL ELECTRIC CO., Inc.
Plants—Newark 5, N. J., Rockford, Ill.

Continental ELECTRIC MOTORS

EQUIPMENT MEN . . . in the News

Glass Fibers Relocates Executive Offices

Glass Fibers, Inc., has signed a lease for the entire second floor area of the new building being constructed at Toledo by the Manhattan Building Co. Announcement of the proposed tenancy was made by F. H. May, Jr., vice president of Glass Fibers.

The floor area, totaling 7,620 sq. ft., will be occupied by the executive, administrative, and sales staffs of the glass concern. Completion of the new space is set for early March when the executive group will move from present offices at nearby Waterville.

Trower Named New Bovaird Supply Co. Treasurer

T. H. TROWER

Thomas H. Trower has been elected treasurer of Bovaird Supply Co., of Tulsa, according to Davis D. Bovaird, president of the pioneer supply firm. Trower took office January 1, 1951.

Having received his A.B. and LL.B. degrees at University of Oklahoma, Trower joined John H. Poe in the practice of law in 1946, and has been associated with the law firm of Williams, Boesche & McDermott since August 1947.

Reliance Opens Sales Office in Newark, N. J.

Establishment by Reliance Electric & Engineering Co. of new branch sales offices in Newark, N. J., and El Dorado, Ark., and the transfer to Buffalo from Syracuse of the district office directing the company's sales throughout northern and western New York State, are announcements made by E. E. Helm, sales vice president of the motor-manufacturing concern.

Helm also named eight field sales engineers who are to take over new assignments resulting from the creation of the foregoing offices.

C. B. Allen, sales engineer in the company's Detroit office, becomes district manager in Buffalo, heading up the work formerly handled from Syracuse by G. E. Bevis, now a vice president of the recently acquired Canadian division of Reliance at Welland, Ont. William H. Brehmer, sales engineer in Buffalo while it was a branch office, moves to Syracuse to head branch operations there.

Two sales engineers from Reliance's New York office will staff the new office at Newark. Elwood H. Koontz, who joined the company in 1936, becomes the branch manager, and F. R. Obenchain, with Reliance since 1941, joins him as sales engineer.

R. C. Suttle, sales engineer in the Cincinnati office for the past 2 years, has been made manager of the new office at El Dorado.

W. C. McConnell, who has been directing sales at the Reliance office recently opened in Charleston, W. Va., succeeds Allen in Detroit.

C. V. Harp, Jr., transferred from Houston, replaces McConnell at Charleston, and R. I. Coryell, Jr., sales engineer at Syracuse since last March, replaces Suttle in Cincinnati.

Mud Control Laboratories To Distribute Ken-Oil

Russ J. Carlson, president of Mud Control Laboratories, Inc., Oklahoma City, and William E. Stiles, division manager for Ken Corp., announced the completion of a distribution agreement making Mud Control distributors of Ken-Oil, oil-base drilling fluid.

Ken-Oil, a development of Union Oil Co. of California, has been extensively employed as a drilling and completion fluid in California, Venezuela, and the Far East during the past several years.

The liquid concentrate, manufactured by Ken Corp., when mixed with fuel oil or crude oil produces an oil-base mud having all the required characteristics of a stable drilling and completion fluid.

Stiles, formerly sales manager for Core Laboratories, Inc., has established manufacturing and sales headquarters for Ken Corp. in Dallas.

Distribution and servicing of Ken-Oil will be handled by Mud Control in Oklahoma, North Texas, West Texas, and Rocky Mountain areas.

Russ J. Carlson and William E. Stiles.

York Named Manager of Power Rig & Equipment

W. FLOYD YORK

Floyd York has recently been appointed manager of Power Rig & Equipment Co., of Los Angeles. Paul Carpenter, manager of shop and service, has been named assistant manager.

Other personnel in the organization remain intact. York has been engaged in the sale and service of Wilson Manufacturing Co., Inc., rigs for the last 15 years, and was with H & B Sales Co., predecessor of Power Rig & Equipment Co.

Indian Opens New Stock Point at Whitesboro, Tex.

B. R. DUFFY

The Indian Drilling Mud Co., Oklahoma City, has announced the opening of a new warehouse point with mud stocks to serve the surrounding areas at Whitesboro, Tex.

Personnel promotions and moves also announced include: Bernard R. Duffy, moved from Bowie to Dallas where he will mangage a newly opened division office to supervise operations in North and East Texas.

Roy Schoenecke was promoted from main office to assistant division manager under R. F. Parker at Odessa.

T. A. Starr, mud engineer, moved from Pampa to Bowie; Bruce Johnson, mud engineer, moved from Oklahoma City to Odessa, Tex.; A. A. Neely, mud engineer, moved from Hobbs, N. M., to Snyder, Tex.; Lloyd Lundy and Jack Stone, mud engineers, moved from Odessa to Farmington, Tex.; Gilbert Halsey, mud engineer, moved from Farmington to Odessa; and Keith Peverly, mud engineer, moved from Winters, Tex., to Hobbs.

Whitehead Metal Moves to New Baltimore Warehouse

T. M. Bohen, president of Whitehead Metal Products Co., Inc., has announced the removal of the Baltimore metal warehouse to enlarged and im-

proved quarters on Monument Street, Baltimore. This expansion was necessitated by an increased demand for corrosion resisting metals.

John W. Marple will continue to direct activities as resident branch manager.

American Flexible Coupling Names H. H. Kumler Co.

Appointment of H. H. Kumler Co., Houston and Tulsa, as representatives in the states of Texas and Oklahoma, has been announced by American Flexible Coupling Co., Erie, Pa.

The Kumler company was organized in 1946 as a manufacturers' representative in Tulsa, by H. H. (Hub) Kumler. Kumler is a graduate of Ohio State University with a degree in petroleum engineering.

Black Made Advertising Manager of Dravo Division

Appointment of Robert C. Black as advertising manager of the Machinery Division of Dravo Corp., Pittsburgh, has been announced by William H. Collins, the firm's director of advertising.

Dravo's Machinery Division includes the company's heating, ventilating, air conditioning, power plant, piping, and heavy-industrial-equipment departments.

Black formerly was on the staff of the vice president of Westinghouse Electric Corp. and had served as advertising and sales promotion manager for the southeastern district of Westinghouse at Atlanta.

M. J. Crose Inaugurates New Machine Shop Building

Pipe-line spread foremen at the opening of a new machine shop building by M. J. Crose Manufacturing Co., Tulsa, on December 22 are: O. L. (Culey) Carter, G. G. (Tuffy) Griffis, G. E. (Red) Beavers, Chester Kincaid, "Jelly" Wilshire, and "Fat" Beavers. More than 1,000 men from the pipe-line industry attended the opening.

Pacific Pumps Holds Annual Sales Conference

Under the chairmanship of E. J. Weis, vice president of Pacific Pumps, Inc., a 3-day meeting was recently held with 28 salesmen from all parts of the country in attendance.

Speakers included: H. N. Mallon, president of Dresser Industries, Inc.; J. B. O'Connor, executive vice president of Dresser Industries, Inc.; A. R. Weis, president of Pacific Pumps, Inc., and other prominent industrialists.

Sales, production, and engineering problems and new products were discussed by various department heads during the conference.

Among the sales representatives in attendance from the district offices were K. H. Green of Boston; A. R. Hauser, Chicago; J. A. Kendall, Jr., Cleveland; George C. Fisher, Cincinnati; C. Fay Kenrick, Detroit; John Wahlstrand and W. L. Wathen, Houston; J. W. McCormack, Los Angeles; L. S. Lukins, J. J. Coffey, and G. F. Spencer, New York; W. P. Huester, Pittsburgh; R. E. Galbraith, San Francisco; A. E. Smith, Salt Lake City; A. F. Canada and A. L. Anhier, Tulsa; D. A. Bradbury, Toledo; and Terry Lobdell, Flint. The home office was represented by A. R. Weis, E. J. Weis, E. A. Loth, W. T. Spates, D. P. Brush, M. E. Walters, D. B. Harney, A. L. Sherman, C. W. Wulfestieg, J. C. Lake, A. S. Boschan, M. F. Ecker, J. J. Seyffer, S. E. Cook, J. L. Woodward, F. B. Applegate, R. A. Dunbar, and E. A. Prust.

Sales representatives and home-office personnel attending the Pacific Pumps, Inc., 3-day sales conference.

Langford Appointed Ideco District Manager at Tulsa

R. H. LANGFORD

T. D. Collins, vice president of the Supply Stores Division, International Derrick & Equipment Co., recently announced that Roy H. Langford has been appointed district manager for Oklahoma. He will office in the Kennedy Building, Tulsa. Langford joined Ideco in 1948 as Tulsa city sales representative. He first joined an oil-field supply company in 1935. When the war started in 1942 he was field representative for Bridgeport Machine Co. He joined Ideco upon his return to civilian life.

Whitmire Appointed Sales Representative by Hobart

C. P. WHITMIRE

Clyde P. Whitmire has been appointed special factory representative to the oil industry by Hobart Brothers Co., Troy, Ohio, manufacturers of arc-welding equipment.

Whitmire served with A. O. Smith Corp. for 5 years as a field welding engineer. Prior to that he was with Bechtel-Price-Callahan and White Horse Refinery in Canada as welding superintendent.

Whitmire's primary activities will be in oil-field, pipe-line, and petroleum-industry sales.

(Continued on page 146)

Your MARKET PLACE FOR THE OIL AND GAS INDUSTRY...

CLASSIFIED ADVERTISING

UNDISPLAYED CLASSIFIED 12c a word one issue. 10% Discount three or more issues. $3.00 minimum charge. Blind Box in our care counts nine words. Payable in Advance.

DISPLAY CLASSIFIED
$12.00 a column inch one issue . . .
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EQUIPMENT FOR SALE

USED ROTARY AND CABLE TOOL DRILLING TOOLS, WIRE LINES. E. A. KELLY, BOX 881, OKLAHOMA CITY. PHONE 5-6407.

FOR SALE: Pulling 100 wells in Ohio. Approximately 100,000′ 2″ 4½# Tubing, 200,000′ 2″ 3.75# Line Pipe, 50,000′ 4⅞″ Casing, 70,000′ 6¼″ Casing, 5,000′ 8¼″ 24# Casing, 3,000′ 10″ 32# Casing. All Lapweld. Also 2,200′ 16″ OD x ¼″ wall P.E. Used Line Pipe. Send us your inquiries. Buckeye Supply Co., Zanesville, Ohio.

FOR SALE: Westcott, Foxboro and Emco Gas Meters, Geo. R. Milner. Box 124, Okmulgee, Oklahoma.

FOR SALE: At Odessa, Texas, 1 Used 125 HP, 300# Working Pressure Donovan ASME Code Boiler equipped with Elesco Superheater and Fittings, purchased new 1936, $2500. Cities Service Oil Co., Patridge, Bartlesville, Oklahoma.

COMPLETE Mast Pole Rig. Waukesha Motors. Good for 2500 feet. Wm. Andree, Phone 2-9749, Abilene, Texas.

FOR SALE: 2640′ 2″ seamless tubing, Mixed range 1 & 2—60c; 900′ 3″ standard cement lined, 75c; Storage tank—Horizontal 9′ x 25′, capacity 12,500 gallons, Welded, good as new—$500.00; and 400 drill joints, Reed shrunk, Off of 4½″ o.d. drill pipe. Some suitable for further use. M. J. Regan, Coffeyville, Kans.

FOR SALE

9—230 H.P. Bessemer Type 10 Engines with compressors, Steel Buildings, Valves, and Fittings complete for installation. Located Salem, Illinois Oilfield.

ENGLE PETROLEUM, INCORPORATED
Box 655, Evansville, Indiana
Telephone 5-5179

NEW VALVES & FITTINGS
30″—18″—14″ & smaller Merco Plugs
14″ to 2″ Gate, Globe and Check Valves
30″ to 2″ Weld Fittings and Flanges
12″ and 8″ Daniel Orifice Fittings
In Stock for Immediate Delivery
ATTRACTIVELY PRICED—
ASK FOR LIST
MYERS-BAGWELL COMPANY
115 W. Third, Tulsa, 5-7264

A.P.I. CASING FOR TRADE ONLY
Now Located in California

Approx. 15,000 ft. of 7″ O.D. Engineered Casing, mostly N-80, weights 23# to 30#.

Want similar pipe, Mid-Continent area.

Approx. 12,000 ft. 5½″ O.D. N-80 Engineered Casing, weights 20# and 23#.

Want 5½″ O.D. J-55, 14# or 15.5#, Mid-Continent area.

R. H. TECKLENBORG CO.
811 West 7th St. Ph. TRinity 2091
Los Angeles 17, Calif.

EQUIPMENT FOR SALE

FOR CABLE TOOLS
DEGEN PIPE AND SUPPLY CO
Box 107, Red Fork Station, Tulsa, Oklahoma

FOR SALE: 3,000′—5½″ OD 20# 8 RT Seamless Casing with J-55 Couplings; 3300′—4″ OD 15.70# Pittsburgh seamless drill pipe with Hughes flash weld full hole tool joints. Pipe made only 30,000′ hole in Panhandle. 2—100 HP 250# Lucy steam boilers, built 1936, good as new. Other Rotary equipment, both steam and mechanical. All above priced right. Box 1517, Phone 3957, Pampa, Texas.

1—4′-0″ ID x 40′-6″ x 1¼″ thick Tower. No trays. Tri-State Supply Company, Box 610, Mt. Pleasant, Texas.

MODEL K Cardwell single drum servicing unit, mounted on 1943 K-8 International 6x6, 5 to 6000 ft. capacity, 3 Sheave single pole mast—8″-10″, excellent condition, with or without tools. B&G Well Service, Winfield, Kans., Phone 2401.

CASING—5½″ and 7″ No. 1 grade, lapweld and seamless.
TUBING—2″, 2½″, and 3″ regular and upset.
WATER WELL CASING—5⅝″ and 6¼″
Attractively priced.
D. A. MORITZ CO.
9th & B&O, Braddock, Pa.

EQUIPMENT FOR SALE

FOR SALE: 1946 Cardwell QST Servicing unit with 48′ 7″x8″ Cardwell Mast. Suitable for 3500′ 2½″ tubing. Complete set tubing and rod tools. Mounted on 3-Ton EH Mack truck. Frank Jones, McPherson, Kansas.

WELL equipment. New and used spudders, rotaries, core drills, all sizes and types. Cable tools, drill pipe, bits, pipe. Fishing tools rented. Everything for well service. Pressey & Son, Pueblo, Colo.

PIPE FOR SALE

Seamless

5400′ New (Wrought iron) 5½″ OD 13 & 17# 10 VT Range 2, f.o.b. Brush, Colo. area
3000′ J55 A1 Used 5½″ OD 15½# 8 RT Range 2 f.o.b. N. Cen. Ohio area
3000′ J55 A1 Used 5½″ OD 17# 8 RT Range 2 f.o.b. N. Cen. Ohio area
5000′ H40 A1 Used 5½″ OD 14# 8 RT Range 2 f.o.b. Cen. Michigan area
800′ A1 used 10¾″ OD 45# Drive Pipe Range 1 Cen. Michigan area

Lapweld

4000′ A1 Used 7″ OD 17# 10 VT Range 1 f.o.b. Pittsburg area
3200′ A1 Used 7″ OD 20# 10 VT Range 1 f.o.b. Pittsburg area

MICHIGAN CARLON PIPE COMPANY
20120 Livernois Detroit 21, Mich.
DIamond 1-1400

Liquidation Special!

TOWERS AND VESSELS

2—3′6″ x 10′ x ⅛″ vertical
1—3′6″ x 16′ x ⅜″ vertical
1—20″ x 5′ x ⅜″ vertical
2—3′ x 6′ x ⅜″ vertical on 6″ skirt
1—12′ x 66′ x ¾″ w/29 pressed steel trays and reboiler
1—3′ x 7′ x ¼″ horizontal
1—6′ x 38′ x ⅞″ vertical
1—3′ x 5′ x ⅛″ vertical
1—3′6″ x 16′ x ⅛″ horizontal
4—3′ x 12′ x ⅜″ vertical
1—3′6″ x 30′ x 1″ w/6 sidepans—vertical
1—3′6″ x 5′ x ¼″ vertical
1—3′6″ x 15′ x ⅛″ horizontal
1—15½″ x 5′ x ½″ vertical
1—4′ x 26′ x ⅛″ vertical
2—2′6″ x 15′ x ⅜″ vertical
1—4′ x 16′ x ½″ horizontal
6—2′6″ x 20′2″ x ⅜″ vertical

WRITE—WIRE—PHONE

DULIEN STEEL PRODUCTS, INC.
of Washington
P. O. BOX 667
COTTON VALLEY, LA.
PHONE: COTTON VALLEY 26

EQUIPMENT FOR SALE

COUPLINGS—6″ Merchant, straight tapped, 4⅛″ long, 8 V thd. New, perfect—300 pcs. Julius M. Fogelman, 1649 Perkiomen Ave., Reading, Penna.

ONE Gardner-Denver Compressor Unit size 12 x 11 and 4¾ x 11, direct connected with 100 HP electric RPM motor, complete with all equipment; located at Refugio, Texas; in service forty-five days. Will take reasonable discount. Clymore Petroleum Corporation, 238 Kaffie Building, Corpus Christi, Texas.

DRILLING EQUIPMENT
STEAM and POWER RIGS

Complete in Excellent Condition

Also

AUTOMOTIVE EQUIPMENT

P. O. Box 8072
Houston 4, Texas. Ph. JAckson 3724

2 NEW SHOT HOLE DRILL RIGS

SPECIAL PRICE $5000

Complete with mast, double acting hydraulic rams to provide 10′ continuous non-chucking stroke, hydraulic operated winch, hydraulic powered rotary table, swivel and 4x5 mud pump, all mounted on 1½ ton Ford truck. Capacity 400′ of 3″ hole, or equivalent. Also available are 49 sections of Drill Pipe, 2⅜″ x 10′.

International Derrick & Equipment Co.

Department No. 204, Atlantic Building
DALLAS, TEXAS

EQUIPMENT FOR SALE

FOR SALE—One truck mounted Sullivan 200 Rotary Drilling Rig complete including 2,000 feet of new 2 and ⅞″ drill pipe, drill collars, light plants, water pumps, dog house; three other trucks, one new 5 x 10 mud pump and motor operating as a separate unit. Box D-828, The Oil and Gas Journal, Tulsa, Oklahoma.

FOR SALE: 6000 ft. Jones 7-1″ second-hand Sucker Rods, located Oklahoma City, A-1 condition. M. R. Travis, Box 1343, Tulsa, Oklahoma.

STEEL BUILDING COMPLETE

Dismantled and ready for shipment. Size 54′ high x 64′ x 124′ long with 10 ton crane and track through building. 700′ of outside track.

HISE GREEN
2204 Virginia St., Phone 4000
Joplin, Mo.

Several Army Surplus 4½″ x 6″ Gaso Duplex 1860 Pumps—two piece skid mounted with Chrysler 8 cylinder engines. Will sell pumps only or complete units about half price.

H. H. COFFIELD
ATTN.: W. H. Orr
Phones: 132—Rockdale, Texas
A-86064—Houston, Texas

FOR SALE

12,500′ rig with Titan-Wilson draw works; powered with three 350 HP LeRoy motors. 2—18″ Oilwell mud pumps. 12″ QRC blowout preventor. 400 ton traveling equipment and swivel. Vibrator shale shaker. 136′ heavy duty derrick. Steel mud house; 2 steel mud tanks. 7½ KW light plant. 10,300′ of 4½ Reed extra hole supershrunk drill pipe which has drilled less than 30,000′; 6—6⅛ drill collars. Above equipment is modern and in first-class condition. Contact Vernon Whiteley, Fair Foundation Building, Tyler, Texas; Phone 2-2212.

EQUIPMENT FOR SALE

3—160 CUBIC FOOT Air Compressors. Diesel: Gasoline. J. C. Morrison, Midwestern Drillers, Liberal, Kansas. Phone 2441.

PORTABLE ROTARY RIG: Mayhew-Douglas truck mounted portable rotary drilling rig, entirely complete with 3000 ft. drill pipe, 16 drill collars, heavy 4 wheel drive tractor truck and water-pipe trailer, bus type tool house with shop, parts bins and bunk, oil field gin pole truck, butane trailer, all tools and supplies. Outstanding performance record. Suitable for drilling slim holes to 2000′ for 5½″ casing or drilling 5⅝″ strat and core holes to 3000′. Complete specifications and pictures on request. Douglas Engineering Company, 3607 Princeton Ave., Dallas, Texas. Phone LOgan-2220.

EQUIPMENT WANTED

PULLING UNIT

Wanted—Truck mounted unit complete with mast. Unit must be capable of handling 5000′ of 2½″ tubing and have drum that will spool 7,500′ of ⅞ line.

Box D-822, The Oil and Gas Journal, Tulsa, Oklahoma

Wanted to Purchase

Used Boiler Tubes

Any size from 2″ OD through 5½″ OD in straight or mixed carload quantities.

WRITE—WIRE—PHONE

Sonken-Galamba Corp.

2nd and Riverview (X-672)
Kansas City, Kansas
THatcher 9243

FOR SALE

50,000′ 20″ 78.6# API spec. 5L, grade B., seamless line pipe, beveled ends.
30,000′ 5½″ 14# J 55, seamless casing, Short T & C, range 2, 8 RT.
70,000′ 7″ 20# J 55, seamless casing, short T & C, range 2, 8 RT.
2″ 4.70# seamless external upset tubing, J 55, range 2, 8 RT.
All above new material.

J. P. NAHAS
Snyder, Texas, P.O. Box 638, Phone 1129

FOR SALE

15,000′ 2⅜″ OD 3.75# & 4# Good Used Lapweld T&C Range 1 Line Pipe.
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Will pay cash for settled production in any amount between 100 and 3,000 barrels daily or partially developed acreage with substantial proven reserves in Texas, Oklahoma, Kansas, New Mexico, Colorado or Wyoming. Submittals must stand thorough engineering investigation and must be priced to show reasonable payout and profit to purchaser. Prospective purchaser is independent who will deal directly with owners or through broker.

Box D-832

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

HELP WANTED

POSITION Available February 1, 1951, Assistant or Associate Professor with Masters degree or higher in Petroleum Engineering to teach reservoir engineering courses in rapidly growing school with excellent laboratory and other facilities. Qualifications will determine salary, but will be comparable to industry. Location Southwest. Box D-765, The Oil and Gas Journal, Tulsa, Oklahoma.

FOREIGN and Domestic Oil Employment Directory covering the oil industry, showing where to apply for jobs. Price $5.00. Oil Industry Mailing List, Box 2603, Tulsa, Okla.

THE NEWLY organized Venezuelan Atlantic Transmission Corporation requires a Superintendent of Transmission to be responsible for physical operation of line, compressor plants along the line, transmission of gas and the forecasting and dispatching of the operation of a natural gas line. Must have minimum of 5 years experience with large natural gas company. Graduate engineer preferred. Starting salary in the range of $13,000 per year plus liberal monthly living allowances. Give full details in reply to The Atlantic Refining Company, P. O. Box 2819, Dallas, Texas.

GEOPHYSICIST WANTED

Position open for experienced seismologist for supervisory work with major independent, Midcontinent area. Permanently located in Tulsa. In replying, give personal history, education qualifications, and details of professional experience.

Box D-823, The Oil and Gas Journal, Tulsa, Oklahoma

RIGGING SUPERVISOR

Large east coast refinery seeks rigging department supervisor. Require sufficient engineering background to supervise rigging operations in construction and maintenance work. Capable of directing large staff. Complete working knowledge of heavy mechanical equipment required.

Write giving age, experience & salary desired. **Box D-838, The Oil and Gas Journal, Tulsa, Oklahoma.**

HELP WANTED
CHIEF GEOLOGIST

Good opportunity for geologist with sufficient education, training and experience to act as Chief Geologist for strong independent oil company. Location, Houston. Write giving complete details of personal and employment history. Replies confidential. Address—

Box D-824, The Oil and Gas Journal, Tulsa, Oklahoma

HELP WANTED

ELECTRICAL ENGINEER: New large oil pipeline company requires electrical engineer to handle design, construction and devise maintenance procedures, all classes equipment to 5-KV switch gear. Some familiarity with sub-stations to 110-KV, 5000-KVA desirable but not required. No communications or electronics involved. Include full professional and personal details and minimum salary, first letter. Job is permanent. Box D-761, The Oil and Gas Journal, Tulsa, Oklahoma.

THE NEWLY organized Venezuelan Atlantic Transmission Corporation requires an experienced Combustion Engineer to promote the sale of natural gas to Venezuelan industries. Must be able to demonstrate advantages of natural gas consumption and advise customers on plant conversion. Prefer candidate with working knowledge of Spanish. Starting salary range approximately $8,500 per year plus liberal living allowances. Give full details in reply to The Atlantic Refining Company, P. O. Box 2819, Dallas, Texas.

EXPANDING program of well known geophysical company provides excellent opportunity for a few qualified Party Chiefs. Applicants should have not less than three years experience as Party Chief, be proficient in interpretive skill and have proven ability to administer crew. Liberal compensation based upon competence of applicant. Box D-813, The Oil and Gas Journal, Tulsa, Oklahoma.

EXPERIENCED GEOLOGIST, qualified for division Geologist Rocky Mountain area, with minimum eight years' experience. Wide experience desirable; four years' experience in Rocky Mountains required. Location Denver. Write, giving full details. Replies confidential. Box D-830, The Oil and Gas Journal, Tulsa, Oklahoma.

REFINERY ENGINEER: Minimum 3 to 5 years experience in refinery maintenance, construction and operation to act as assistant superintendent of substantial Midwestern Independent Refining Company. Write Box D-818, The Oil and Gas Journal, Tulsa, Oklahoma.

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Box D-831

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

HELP WANTED

WANTED: By reliable company more than 30 years in the business. Experienced oilfield machinery and engine salesman in Mid-Continent area. Write qualifications and experience. Box D-833, The Oil and Gas Journal, Tulsa, Oklahoma.

SITUATIONS WANTED

ATTENTION: Well established oil well drilling contractor desires to manage and supervise: Individuals', groups', small or medium-sized oil companies' drilling, production and operating problems in Central and Western Texas, and New Mexico. Personal interview by appointment is desired. Makin Drilling Company, Box No. 131, Ph. No. 131, Hobbs, New Mexico.

DRILLING Contractor operating in West Texas and New Mexico desires to contact small or medium-sized independent oil company who needs an operating manager. Personal interview desired. Twenty years experience in all phases of the oil industry. Address replies to Box D-644, The Oil and Gas Journal, Tulsa, Oklahoma.

GEOLOGIST, 35, 8 yrs. exp. Texas Gulf Coast, subsurface, leasing, developing and making drilling deals. Wish to locate in Rocky Mt. Area with aggressive independent, moderate salary and interest. Box D-817, The Oil and Gas Journal, Tulsa, Oklahoma.

GEOLOGIST: M. A., single, draft exempt; with one year's experience in surface and subsurface (Core-Drilling) geology. Interested in exploration—U. S. or foreign. Available Feb. 15. Box D-829, The Oil and Gas Journal, Tulsa, Oklahoma.

PRODUCTION or drilling superintendent with 25 years experience with independent and Major companies desires position either domestic or foreign. 633 No. Jefferson, El Dorado, Arkansas.

GEOLOGIST, Master's degree, single, 35, no dependents or military commitments, two years subsurface experience, desires foreign work in Middle East or South America, or domestic work in Permian Basin or Mid-Continent area. Available immediately. Box D-837, The Oil and Gas Journal, Tulsa, Oklahoma.

REFINERY Manager, twelve years experience in all phases of refinery operations, technical background. Prefer Kansas, Oklahoma, or Texas location. Box D-836, The Oil and Gas Journal, Tulsa, Oklahoma.

INDEPENDENT Oil Operator with geological degree and several years geological experience wishes to become associated with individual or group investing or desiring to invest in the oil business, on a salary-interest basis. Familiar with all phases of operation and capable of directing the program desired. Such association should be mutually beneficial. Conference can be arranged after preliminary negotiations. Write Box D-834, The Oil and Gas Journal, Tulsa, Oklahoma.

PATENT ATTORNEYS

PATENT Practice before U. S. Patent Office. Validity and Infringement Investigations and Opinions. Booklet and form "Evidence of Conception" forwarded upon request Lancaster, Allwine & Rommell, Registered Patent Attorneys, Suite 418, 815-15th Street, N.W., Washington 5, D. C

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FINANCIAL backing required for development of several areas favorable for oil exploration. Based on extensive stratigraphic studies and active maintenance of an assembly of regional geological subsurface structural contour maps of central and eastern Oklahoma. Principals only. Geologist, P.O. Box 1884, Tulsa, Oklahoma.

BUSINESS FOR SALE: Fox Paraffin Solvent Manufacturing Company. Patented formula. Sacrifice price. Terms acceptable. Owner deceased, reason for selling. Box D-835, The Oil and Gas Journal, Tulsa, Oklahoma.

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IMMEDIATE SALE

Automatic 4 gal. tinplate petrol can manufacturing plant by Bliss. Capacity 10,000 cans per 8 hr. shift. This is a **NEW PLANT** and has never been used. Full details (codeword SMAVV) from:—

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EQUIPMENT MEN

(Continued from page 142)

Increased Space for Leeds & Northrup

Acquisition of approximately 85,000 sq. ft. of additional floor space by Leeds & Northrup Co., Germantown, Pa., manufacturer of electrical measuring instruments, automatic controls, and heat-treating furnaces, has been announced by C. S. Redding, president. "This space," said Redding, "will enable us to increase our production and also improve our delivery and other service facilities. We will transfer some operations to this new space; however, the principal manufacturing and other activities of the firm will continue to be centered at the main plant."

Roebling Names Three New Electric Wire Executives

Stuart E. Yeaton, general product manager, Electrical Wire Division of John A. Roebling's Sons Co., Trenton, N. J., has announced the appointment of three new sales executives.

Howard E. Maloney was made manager of sales. He has been associated with the Roebling company for the past 9 years, starting as a salesman in the Seattle district office. Frank T. Craven, a member of the electrical staff since 1936, was appointed assistant manager of sales. Roy H. Hainsworth becomes eastern regional manager, with headquarters in Trenton. He joined the Roebling sales force in 1947.

Hardy, Hayward Elected to New Positions by Ryerson

Following a meeting of the board of directors of Joseph T. Ryerson & Son, Inc., it was announced that Charles L. Hardy has been elected president taking the place of Everett D. Graff who will become chairman of the executive committee. Thomas Z. Hayward was elected vice president in charge of sales. Both Hardy and Hayward were elected as directors and members of the executive committee.

Hardy, formerly assistant to the president, joined Ryerson in 1927. In 1945 he was made manager of the Ryerson Philadelphia plant and in 1949 moved to the general offices in Chicago as assistant vice president in procurement, later becoming assistant to the president.

Hayward was formerly general manager of sales for the group of 13 Ryerson steel service plants. He has spent his entire business life with Ryerson, joining the firm in 1917.

Flexitallic Announces New Distributors, Agents

Flexitallic Gasket Co., Camden, N. J., has announced the addition of three new distributors and two new agents to its field organization. Tate Engineering & Supply Co., Inc., Baltimore, will serve Maryland and Washington, D. C. A. L. Crump & Co., Chicago, will serve northern Indiana and Illinois. Carl Grimes & Co., Des Moines, will serve western Iowa. Frank Valetti & Co., Philadelphia, will serve the marine industry within the limits of Philadelphia.

Southern Marine Supply Co., Inc., Savannah, Ga., will serve the marine industry within the limits of Savannah. Transmission Engineering Co., San Francisco, is expanding its service to include the marine industry in that area. Eagle Asbestos & Packing Co., New Orleans, will now serve both industrial and marine industries in eastern Louisiana and southern Mississippi.

Halliburton Selects Name Contest Winner

Prize winners' checks for submitting the entry, "Hardy Hal" in the recent Halliburton Portland Cement Co. naming contest are presented to C. C. McCleary of Mission, Tex., center, $500 first prize, and Jose Mora of Mercedes, Tex., right, $200 third prize. William M. Taylor, Halliburton sales representative in the Rio Grande Valley, made the awards. Second prize, $300, went to R. R. Richter, Corpus Christi. "Hardy Hal" is the name selected for the cartoon figure with a Shell Brand cement-bag body and an oyster-shell head, which has been appearing in Halliburton ads since October 1950.

INTERNATIONAL

(Continued from page 135)

detail to the Department of Commerce in Washington.

This rapid advance toward the prewar output of 55,614,000 bbl. a year or 152,000 bbl. daily, Peters said, has been accomplished despite the fact that three of the seven Indonesian refineries had not been put back into operation by the end of last year and a fourth was operating below capacity.

The 1949 output, as compiled in foreign service reports, included 14,396,000 bbl. of fuel oil, including Tarakan crude which can be used virtually without refining; 15,876,000 bbl. of motor gasoline, 9,757,000 bbl. of diesel oil, 6,009,000 bbl. of kerosine, 860,000 bbl. of aviation gasoline, 282,000 bbl. of paraffin, wax, and cerasine, 162,000 bbl. of asphalt, and 87,000 bbl. of solvents.

Largest export item.—For the first 10 months of 1949, Peters said, petroleum and petroleum products accounted for 29 per cent of Indonesia's total exports and comprised the largest single item in export trade. Preliminary statistics for the year show shipments of approximately 42,239,872 bbl., compared with 28,234,000 bbl. in 1948 and 49,629,551 bbl. in 1939. While the 1949 volume was less than that of 1939, the value in guilders was 1⅘ times greater.

Peters' report, based in part on long personal service in the area, held that the oil companies operating in the area had made outstanding progress in raising production of fields which had been heavily damaged, first by the companies as the Japanese invaded, then by allied bombing, and finally by the Japanese as they pulled out, from a low of 2,100,000 bbl. in 1946 to 44,906,000 bbl. in 1949. This was approximately 66 per cent of maximum prewar production, particularly in view of the fact that many of the most productive areas had remained inaccessible through much of the prewar period and some had not been reached by the operating companies in 1949.

British Borneo.—Peters' study also covered British Borneo, where crude production in 1949 was 25,100,000 bbl. against 2,050,000 bbl. in 1946 and a prewar high of 7,097,000 bbl. in 1939.

There is one refinery, near the Miri fields in Sarawak, which operates on oil from both that field and the more important Seria field. The plant had a prewar capacity of 20,000 bbl. daily. It was reopened on Christmas Day, 1946, with a distillation unit composed largely of salvaged materials having a capacity of about 17,500 bbl. daily. Three months later another unit was brought into operation with a rated capacity of 11,000 bbl. daily.

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CALENDAR OF EVENTS

The Calendar of Events will be found on page 35 of this issue, immediately following the feature "They Say."

Flex-Lip Pipe Wipers Distributors Named

A list of distributors of Flex-Lip pipe wipers throughout the oil-producing sections of the country has been released by Petroleum Mechanical Development Co., of Houston, manufacturers of oil-field equipment.

The East Texas and Louisiana area will be served by Bob Chenoweth, Houston. Representative in the Southwest Texas district is Blackie Clark Well Service, Corpus Christi. Other distributors and the areas they serve are: E. L. Oliver Co., Oklahoma City, Oklahoma, Kansas, and the Texas Panhandle; Drill Collar Service Co., Midland, Tex., West Texas and New Mexico; and Moulden Oil Field Services, Casper, Wyo., Rocky Mountains and Canada.

Petroleum Mechanical Development Co. is owned by John E. Eckel and and Marvin R. Jones.

Pacific Valve Executive Is NPA Representative

Irving M. Dumm, secretary-treasurer of Pacific Valves, Inc., Long Beach, Calif., represents the western states on the 20-man advisory council to the valve and fitting section of the National Production Administration.

Dumm recently returned from Washington, D. C., where he participated in preliminary planning for operation of the industry under a defense economy.

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A Real Innovation!

Here is the new Shand & Jurs spring loaded Internal Safety Valve for petroleum storage and transfer tanks. This all-steel safety valve, Fig. ST-6810, gives greater protection to petroleum products and equipment, and at the same time provides a more streamlined and dependable tank valving system.

For greater safety, the S&J Internal Safety Valve is held open against spring pressure by a lever, cable and fusible link. Should a fire occur near the tank discharge line and endanger its contents, the fusible link melts . . . the internal valve closes instantly . . . and there's no more fuel added to the flame.

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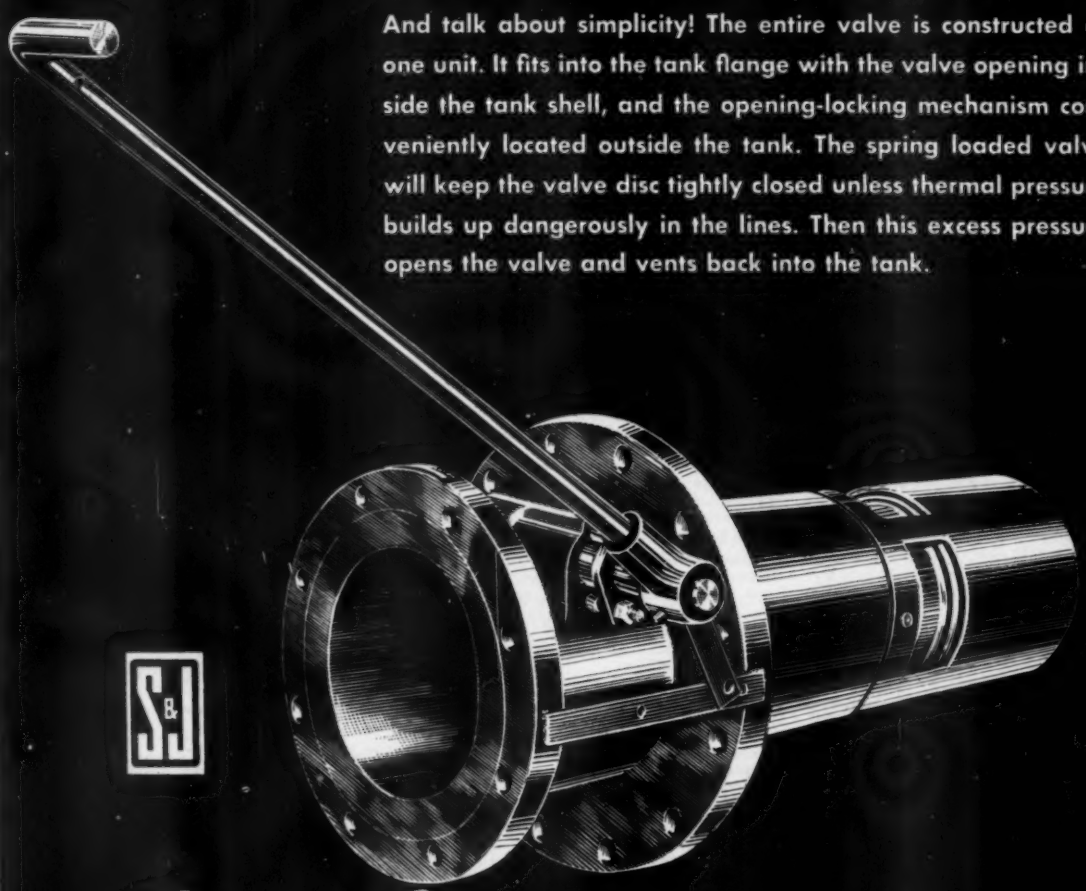

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